

COMPUTERWORLD

INSIDE

Spotlight — Many shades of blue. Pullout section on IBM-compatible PCs, portables and laptops pages 68.

In Depth — A competitive strategy that's tailor-made for you. **Page 69.**

IBM reorganizes software divisions, elevates status of SAA. **Page 105.**

Tax Reform Act deals six-month setback to IRS information systems. **Page 2.**

It's official. Sun Microsystems enters the PC market. **Page 6.**

The wait is almost over for IBM's central data dictionary. **Page 4.**

Microsoft returns fire, charging Apple with slander in copyright suit. **Page 105.**

Presentation Manager looks fine, but some feel queasy over migration demand. **Page 6.**

Bug attack prompts IBM to revise VM High Performance Option. **Page 104.**

AT&T files tariff for first ISDN service, four months behind schedule. **Page 7.**

Cullinet's VAX entry draws praise, but competitive clouds loom. **Page 4.**

Interface announced as IBM desktop publishing partner. **Page 33.**

PC heavyweights to back emerging Unix standard

BY DOUGLAS BARNEY
CW STAFF

NEW YORK — A controversial version of Unix that is being jointly developed by AT&T and Sun Microsystems, Inc. should get a major boost today as the leaders of the microcomputer spreadsheet and data base management system markets pledge support for the operating system.

Lotus Development Corp. and Ashton-Tate Corp. are both expected to announce support for the upcoming Unix System

V, Release 4. Many observers have claimed the new version will give Sun an unfair edge in the market because that company will be privy to specifications for the new operating system before other vendors.

If AT&T and Sun garner enough support for their Unix version, which will include a graphical user interface, Unix will be able to offer the same features as Apple Computer, Inc.'s Macintosh and Microsoft Corp.'s OS/2 Presentation Manager.

However, Unix System V, Release 4 will not even ship in beta-test form until later this year and will not formally ship until next year, giving observers ample time to react, commentators said.

Lotus confirmed that it will develop a Unix version of its market-leading 1-2-3 package, thus ending months of industry speculation. Lotus declined to provide pricing or a ship date, but the product is expected to use the core code from its upcoming 1-2-3 Release 3 spreadsheet.

Continued on page 6

Silverlake software scramble

BY STANLEY GIBSON
CW STAFF

As the announcement date draws near for IBM's System/36 and 38 follow-on processor, commonly called Silverlake, developers are scrambling to test System/36 and 38 programs for compatibility with the new machine.

Silverlake is expected to run not only existing software for System/36 and 38 minicomputers but also Systems Application Architecture-compliant software in native mode, causing developers to look ahead to SAA compatibility issues.

The consensus of developers interviewed by *Computerworld* is that Silverlake will roll out June 21. Those developers also expressed the following opinions:

• In order to ensure that software will be available at the time of the Silverlake introduction,

Continued on page 8

Fired-up DB2 due

ESA/370 will fuel major boost in throughput

BY CHARLES BARCOCK
CW STAFF

IBM's next release of DB2, expected to be announced by the end of this month or early in May, will tap features of IBM's new ESA/370 operating system to boost transaction throughput by 25% to 30%, according to sources who said they had been briefed by IBM.

In addition, the next release of DB2 is expected to incorporate an implementation of referential integrity more extensive than previously believed, according to industry sources and a spokesman for IBM's Santa Teresa, Calif., development laboratory.

The double-pronged improvements will be aimed at addressing the weaknesses that have constrained DB2's use for large production applications.

Although an immediate performance gain of 25% to 30% might be considered standard for a new release of DB2, larger gains are expected to follow as the product is reworked and applications are restructured to take advantage of ESA features.

according to Tony Denison, vice-president of the consulting firm Ausco in Orlando, Fla. Ausco is part of Cincinnati Bell Information Systems.

Some sources claimed IBM will refer to the next release of DB2 as Version 2.0, instead of Release 4.0 of the first version, to signal a departure from the first round of releases. Others said they had heard IBM officials dub the release as the present.

Continued on page 105

Tower of power

IBM DB2 installed has greatly improved



INFORMATION PROVIDED BY IBM AND AT&T COMPUTER ASSOCIATES
CW CHART

Eastern recruits MIS to plug brain drain

BY ELISABETH HORWITT
CW STAFF

Computer power is replacing some of the human expertise that Frank Lorenzo is said to be draining from Eastern Airlines. After a year and a half of concentrated development work, Texas Air Corp. subsidiary

System One Corp. has begun test flights of the new systems it hopes will pull Eastern's customer service record out of its current nosedive.

When only 61.5% of its January flights arrived on time — that is, within 15 minutes of their schedules — Eastern earned the worst performance

record in the industry for that month, according to the Department of Transportation. In February, Eastern boosted its on-time flight percentage to 70.6% and moved up from 14th to 11th place.

Continental Airlines, another Texas Air subsidiary, slipped from 11th to 13th place, with 67.7% of its flights on time that month.

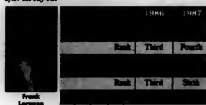
Eastern also reportedly received more customer complaints than any other airline except Continental.

Wage cuts create exodus
Industry sources attributed Eastern's service problems to the recent eras of experienced personnel, reportedly brought on by Texas Air Chairman, Chief Executive Officer and President Lorenzo's wage cutting and battles with the unions. The carrier reportedly has lost 20% of its cockpit

Continued on page 104

Doing more with less

Texas Air trimmed nearly one-quarter of Eastern's work force after the buy-out



INFORMATION PROVIDED BY THE AIR TRANSPORT ASSOCIATION AND EASTERN AIRLINES
CW CHART

IN THIS ISSUE

Fashionably late. Minis are all the rage at HP, which pre-viewed models across its entire line last week, including two long-awaited HP 3000s. The Precision Architecture-based offerings are expected to give DEC, IBM a run for their money. Page 8.

Early arrivals. Just five weeks after announcing high-end Cyber 990s, CDC unveils a revamped Cyber 930 line, which is slated to ship in July. Page 14.

NEWS

4 IBM close to SAA repository release, sources briefed by IBM say.

4 Cullinet plants IDMS/SQL in VAX market.

6 Programmers encounter turbulence porting Windows applications to OS/2.

6 Sun enters the front office with 386-based workstations.

7 Purchase of Computervision brings restructuring, possible layoffs to Prime.

7 AT&T ready to offer first long-distance ISDN service in U.S.

8 Former BMC Software partners seek \$20M.

10 Evans & Sutherland enters supercomputer arena.

15 Wang enhances WITS, unveils add-on board for IBM PC.

16 DEC inserts 12-in. WORM optical disk drive into market.

16 Apple slices sales, marketing unit into separate regional divisions.

104 IBM corrects problem areas in VM/SP High Performance Options.

104 IBM hopes on 3990 cache memory ship date.

105 IBM reorganizes software operations.

105 Microsoft counters Apple, charges slander, attempt to stifle development.

105 IBM hikes royalty prices.

SOFTWARE & SERVICES

23 IBM users group president explains SAA's effect on Systems/36, 38 users.

23 Pro/fit eases time-keeping burdens.

23 Arthur Andersen unveils CASE tool kit.

MICROCOMPUTING

33 IBM publishing systems hit the desk.

33 Epson prices resaw.

33 Everest targets 386-based system at Desktop.



Chip lines grow in the IBM sphere. Follows page 68.

NETWORKING

47 Contrary to myths, ISDN works.

47 Real estate firm links disparate nets.

47 SAA growing up slowly.

SYSTEMS & PERIPHERALS

59 Furniture manufacturer tightens automation reins.

59 Paine Webber bullish on Quotron.

59 Mid-frame Unisys line appealing to Sperry customers.

MANAGEMENT

75 Debit cards negotiate the road to acceptance.

75 American President Companies' MIS boss keeps freight moving.

75 MIS quality measurement to soar in importance.

Quotable "Slander."

MICROSOFT CORP.
Referring to Apple's copyright infringement suit over Windows 3.01.
See story page 106.

COMPUTER INDUSTRY

79 Edelman leads Data-point leveraged buy-out offer.

79 Analysts paint bleak picture for mid-size firms' first-quarter earnings.

79 British invasion strikes U.S. software and services firms.

COMPUTER CAREERS

85 Ailing health care industry needs specialists.

TRENDS

106 Information systems execs are own harshest critics.

SPOTLIGHT

Users postpone chip migrations until OS/2 applications materialize.
Follows page 68.

IN DEPTH

69 Even the small or mid-size company can gain a competitive edge. By Michael Packer and Janice Brodman.

OPINION & ANALYSIS

19 Grayson overcomes Macintosh culture shock.

23 Babcock lifted by IBM's magic carpet.

33 Barney digests Kahn's sugary distillate.

47 Ulrich rings in Bell's liberties.

59 Gibson unearths RISC worms.

75 Connolly offers relief for users.

79 Zachmann follows IBM's structural regression.

DEPARTMENTS

18 Editorial

78 Calendar

95 Marketplace

101 Training

106 Inside Lines

NEWS

Tax act sets back IRS systems projects

BY J. A. SAVAGE
CRITIC

WASHINGTON, D.C. — You can call the bank and get your account balance, and you can call the overnight mail service to find the whereabouts of your package, but you still cannot call up the Internal Revenue Service to find out the status of your international business return.

As a result of the reforms of the Tax Reform Act of 1986, the IRS suffered a six-month setback in its drive to establish customer service via computer-generated information.

So, if you cannot get accurate tax reference information over the phone this week, blame it on Congress.

Mammoth undertaking
The reforms "took more programming than any other single piece of tax legislation," said Jerry Rabe, director of the tax systems division of the IRS. He estimated that as many as 200 staff years were spent reprogramming.

According to Rabe, the project employed almost 300 programmers, some of whom worked nights and weekends to rewrite 25% of the IRS's Cobol code.

Rabe insisted that thus far, the rewritten system has handled processing the new returns exceptionally well. He said he expects the system will not have any trouble handling next week's expected deluge of tax returns processing.

Hands tied
Projects aimed at automating and tying together data bases — so the IRS can find out if its left hand knows whether or not its right hand has recently been in your pocket, and if so, how deeply — have been postponed.

In one instance, an attempt to automate tax referencing by connecting it to an accounting system was postponed until next year's tax season. Instead, "our energy was spent in training 9,000 people to answer questions on the 1986 Tax Reform Act," said Bob LeBaube, the director of the IRS tax service.

If programmers were available to devote the same amount of time and energy to upgrading the system as was spent on the reprogramming, the accuracy of the service received this year would be increased, the IRS said.

Thus, due to the delay in instituting this tax information service, the information dispersed by the IRS operator this year will most likely be dependent on memory. Next year, LeBaube said, the Automated Tax Service

System should be in place, allowing operators to retrieve information from computer data banks. With the system, the IRS will only have to train its staff to operate the system, not to know all the answers.

Other upgrades planned in the near future but delayed for the Tax Reform Act include a project to link together the IRS's data bases.

Only three of the IRS's nine divisional data bases can communicate: the service, collections and examinations divisions. As a result, the international division

If programmers were available to devote the same amount of time and energy to upgrading the system as was spent on the reprogramming, the accuracy of the service received this year would be increased.

cannot call up your collections file if you have international operations.

Rabe warned, however, that it will not be long before each data base will have the ability to access the others to make certain that the information in all branches matches.

Despite the allocation of programmers to implement reforms prompted by the Tax Reform Act, a voice-prompted data-collection project was implemented without delay, according to LeBaube.

Wires tapped
The Integrated Test Call System, an operation that tracks the type of calls coming into the IRS and the accuracy of the responses, was instituted in January.

Calls coming into the service can be monitored by IRS supervisors, and data can be entered into the computer through a voice-prompted program. The information on the most frequently asked questions is collected by "ringers" — in the field personnel who call the service to pose questions and who then evaluate the accuracy of the response given by the operator. The accuracy of the data is entered into the system through the IRS's personal computer.

"Unfortunately, it is revealing that the quality level [of the responses] isn't what it should be," LeBaube said.

29,000-foot climb (Source: Technology

DATAKOM/DB. THE TECHNOLOGY THAT PROVIDES RELATIONAL FLEXIBILITY.

DATAKOM/DB is the DBMS that provides relational flexibility without

recent high volume benchmarks, DATAKOM/DB

DATAKOM/DB also has the fullest complement of

development system, CASE technology. And SQL

All of which led 90% of DATAKOM/DB users surveyed

to recommend it without reservation. So if your goal is to improve performance, improve

ADR Performance Software. For more about DATAKOM/DB call 1-800-451-1000

ADR PERFORMANCE SOFTWARE.
Unlock the potential.

IBM repository fog burning off

/ Data dictionary, due by early '89, seen as CASE framework in first phase

BY NELL MARGOLIS
CITYVIEW

IBM plans to announce its long-awaited repository, or central data dictionary, for Systems Application Architecture (SAA) by early 1989 at the latest, according to industry consultants recently briefed by the company.

IBM expects the repository to emerge as a storage facility for vital information across operating systems. But in its first implementation, the dictionary will act largely as an underlying foundation for a computer-aided software engineering (CASE) system, according to Paul Hensinger, chief technology officer at the Computer Task Group, Inc. in Buffalo, N.Y.

"I believe that within the next three months, you will see IBM prepared to articulate a clear-cut direction with regard to its repository," said Hensinger, adding that he has been in close touch with key personnel on the IBM repository project development team based at the com-

pany's research facility in Santa Teresa, Calif.

IBM officials with whom Hensinger has recently conferred believe that a repository is required as a foundation for CASE, Hensinger said. "It will supply the framework for other vendors to interface their products with IBM environments. It is definitely within IBM's reach to accomplish its goal of providing this framework."

George Schussel, president of Andover, Mass.-based Digital Consulting, Inc., recently spoke with staff members at IBM's Santa Teresa development laboratory and came away with the understanding that the repository will include an application generator and will sit on top of a relational data base manager.

"IBM believes — rightly, in my opinion — that the guts of a CASE environment is the back-end application generator rather than the front-end design modules," Schussel said. IBM, he said, anticipates that third-party software companies will supply

front-end CASE tools to interface the repository-based IBM back end.

In fact, the effort to line up such cooperative partners is probably already under way. IBM's Workstation Added Software Engineering product, announced March 1 and slated for late May availability, contains tasks, activities and panels aimed at providing users with an integrated set of IBM application development products as well as products provided by designated third-party members of IBM's Vendor Logo Program. One of the products includes Intel Technology Corp.'s Ecolator — analysis and design software.

Multilinguist?

The forthcoming repository, according to Schussel, will deploy three IBM fourth-generation languages: Application System, geared toward professional business analysts; Query Management Facility, a query facility and reporter with links to third-generation programming lan-

guages; and Cross System Product (CSP), a programmer's tool. All three, as part of SAA, will interface with a wide variety of IBM environments, including VSAM and IMS/DB, as well as SQL and DB2, Schussel said.

"CSP, particularly, will play a key role in building CASE environments," he added. "This is IBM's contention, despite the fact that CSP is now felt to be a very modest product."

For customers, according to Barry Brown, director of Manhattan-based Brownstone Solutions, Inc., which makes and markets tools for IBM's DB2, "the repository's being SAA compliant is the critical element. It's the emergence of a repository standard, not the availability of a repository product itself, that's so important."

News of an imminent IBM repository announcement, Digital Consulting's Schussel noted, brings with it a certain sense of déjà vu. "IBM's own staff freely admits that the company has promised a repository product for about the past 10 years and has never delivered one," he said. "The usual caveats apply." However, he added, "they're at least acting like they're very serious about this one."

Cullinet DBMS draws raves, but will it sell?

BY NELL MARGOLIS
CITYVIEW

WESTWOOD, Mass. — Cullinet Software, Inc. matched its IDMS/SQL relational data base management system squarely into the DEC VAX-based data base market last week and took its best shot at the likes of Sybase, Inc., Relational Technology, Inc., Digital Equipment Corp. and Oracle Corp.

Market analysts found the newcomer technologically impressive and strategically well-thought-out.

"I was blown away by it," said Bob Therrien, an analyst at Paine Webber, Inc. Therrien saw IDMS/SQL and its attendant tool kit demonstrated a week before its official debut. "Its ease of use, the speed of its engine, the whole thrust toward transaction processing — the technology is solid, and Cullinet will also be able to build good applications on top of it as time goes by."

IDMS/SQL and the Knowledge-based tool set "look real strong, real competitive," said William Shattuck, analyst with Montgomery Securities, Inc. in San Francisco. "All points considered, I think that Cullinet is going to make a strong showing in the VAX market. It won't happen overnight; it's going to

be a building process. But they've got all the pieces in place."

However, Shattuck added, "no matter how good the product looks, the big question is going to be, Can Cullinet sell it?" IDMS/SQL is a late entry in a crowded market.

Chief among the pieces in place is IDMS/SQL itself, "designed from the ground up to be a production-powered data base," according to David A. Litwack, Cullinet's executive vice-president of systems products.

Bench wars

Using the TP-1 benchmark, which is a simulation based on a standard debit/credit banking application, IDMS/SQL turned in 13.4 transaction/sec. against a data base of one million account records, the company claimed.

That performance was shadowed somewhat by rival Sybase's own claim, made two weeks ago, that it had used a TP-1 benchmark of its Release 3.0 to record 29.3 transaction/sec. on a data base containing 100,000 accounts.

To substantiate its claim that IDMS/SQL weds relational DBMS's ease of use with the speed, reliability and integrity necessary for multiter, high-volume transaction processing,

Cullinet pointed to a barrage of features:

- Modular architecture consisting of an SQL command parser, a query optimizer and a data engine. The three-part design supports query optimization and compiled queries, multithreading, bulk data access and enhanced indexing capability, all of which combine to yield what



Cullinet's Litwack

Cullinet said is high performance and throughput.

• Twenty-four-hour availability. The Cullinet system, Litwack said, requires minimal human intervention and never has to be taken down to perform any data base activity, including maintenance.

• On-line, automatic recovery, as well as several alternative kinds of journaling and archiving features that give the user multiple safeguards against system crashes and data corruption.

• A central data dictionary that defines and houses referential integrity rules and data constraints. Dictionary-driven in-

tegrity, Litwack said, not only ensures transaction consistency but increases programmer productivity in that programmers do not have to rewrite integrity rules for each application created.

• Various features designed to let users access and update tables in a multiter environment, including nested transactions, which let users begin new transactions while others are still in progress; multilevel data locking; and priority-based deadlock resolution, which means that when two or more transactions go against one data base table simultaneously, the software will take the more important transaction first.

• Multilevel security, including full support for authorization groups. By allowing data base access to be assigned to groups of similarly situated users, rather than requiring authorization on a user-by-user basis, IDMS/SQL can save wear and tear on the MIS director, Litwack said.

He added that IDMS/SQL fully fills all requirements of a fully distributed data base system within any VAX network and will soon be able to connect on-line to IBM data bases.

"This is a scope of capabilities you don't expect to see in the first release of a new data base," said Robert Meurer, president of Rnet, a data processing consultancy in Boston.

But the battle, Meurer said, "will be waged on the tool level, and that's where Cullinet has a real advantage: Knowledgebuild and Application Expert."

COMPUTERWORLD

Editor in Chief
Bill Lohr
Executive Editor
Pete Gills

News Editor
Pete Gills

Senior Editors

James Conolly, Management

Charles Weller, Industry

Elizabeth Horvath, Networking

Charles DeLoach, Software

Freddie Kunkin, Networking

Ed Scahill, Microcomputing

Douglas Barney, Microcomputing

Stanley Gills, Systems

Senior Writers

Barbara Hamilton

Nel Margolis

Alvin R. Ryan

Staff Writers

James Daly

News Production Editor

Thomas Walter

Features Editor

George Howe

Senior Editors

Gina Rubin

David J. Davis, Executive Report

John L. Felt, Special

Any Seminars/Events, In Depth

Special Projects Editor

Michael J. Treisman

Senior Writer

David A. Lofgren

Associate Editors

Deborah Felt

Judy Shaw

News Editor

Sally Conch

Assistant News Editor

Scott McCall

Managing Editor

Dorothy White

Chief Copy Editor

Patricia Hill Erickson

Assistant Chief Copy Editor

Thomas Collier

Copy Editors

Mary Grover

Martin E. Roth

Shawn L. Sauer

Leslie O'Connell

Marta T. Barbe

Cullinet A. Duffy

Design Editor

Marjorie Magowan

Graphics Specialists

Frank C. O'Connell

Ann J. Brennan

Graphic Designer

P. Charles Lachner

Assistant to the Editor in Chief

Thomas Collier

Editorial Assistants

Patricia Felony

Linda Carpenter

Lorraine Wiant

Rights and Permissions Manager

Nancy Steiner

News Services

Mid-Atlantic

201/967-1350

Ann Arbor, Correspondent

Washington, D.C.

202/947-4718

Midwest Correspondent

West Coast

212/247-6055

Kathy Chis Long, Bureau Chief

John P. Sauer, Senior Correspondent

James A. Morris, Correspondent

Stephen Jones, Correspondent

J.A. Sargent, Correspondent

Mary Elston, Editor Assistant

Midwest

312/227-4435

James S. Brennan, Correspondent

IBM News Service

Karlson, Editor, News Service

Heathcliff Office

Box 9171, 753 California Blvd

Framingham, MA 01701-9171

617/879-0700



**ONCE YOU'VE TRIED OUR SOFTWARE,
YOU'LL HAVE A DIFFERENT IMAGE
OF THE COMPETITION.**

Next to us, other software seems a bit...well...leisurely.

After all, our software is so fast, it dramatically reduces the use of your computer resources: CPU Time, SIOs and the like. Typically by as much as 50%. Frequently, even more.

And that goes not only for our sorts, but for all our products.

Of course, seeing is believing. To arrange for a test of any Syncsort product on your system, call **201-930-8200**.

With all we've told you, we're sure you won't be slow getting to the phone.

syncsort
INC.

Presentation Manager presents porting chore

BY STEPHEN JONES
CWI STAFF

REDMOND, Wash. — What was expected to be a smooth bridge between Microsoft Corp.'s Windows applications and its OS/2-run Presentation Manager has turned into a bumpy road for programmers trying to port Windows applications to the new operating system.

These difficulties may stall the emergence of some early Presentation Manager applications if the porting process proves to be more difficult than Microsoft originally promised.

Because it so closely resembles that system, Windows has been portrayed as the only graphics-based development environment that offers trouble-free upward compatibility to the Presentation Manager.

But instead of tackling a simple porting task, developers will be required to convert much of their Windows application code manually, on a line-by-line basis.

The reason: Microsoft's Presentation Manager software development kit does not include the automatic conversion tools that were originally expected to be included in the package, said Adrian King, director of marketing for systems software at Microsoft.

Reams of code

As a result of the lacking automation, King said, the code conversion could take a minimum of two days for a basic Windows application consisting of a few hundred lines of code. When put in the context of a complex commercial application with tens of thousands of lines of code, developers could find writing to Windows to be a major task.

Heavyweights

FROM PAGE 1

Although it will not announce products, Ashton-Tate also intends to reveal support for Unix, a source close to Ashton-Tate confirmed.

Ashton-Tate's biggest money maker, Dbase, was developed under Unix. Ashton-Tate officials said. As a result, moving to Unix has always been a marketing dilemma rather than a technical challenge.

Although he would not specify how his firm will support the new version, Ashton-Tate Chairman Ed Eber said such a product would make Unix a more viable alternative to Microsoft and IBM's OS/2. "This could lift Unix out of the realm of CP/M,"

"At one point, we hoped we could provide tools that would make the conversion automatic, but we fell short on having an automated processor," King said.

Developers who are writing to Windows said last week that the absence of automatic conversion poses only small problems. King said he expects that all Win-

cal and manual-code switches, Microsoft is bundling a guidebook called "Rosetta Stone" with the developers tool kit. This will provide step-by-step tips on how to reorder parameters within a Windows function call or add new parameters to match with the Presentation Manager.

The tool kit features an on-line version of the documentation.

Developers such as Alden Corp. that said Windows will grease the path to the Presentation Manager said they expected the line-by-line coding requirements and have development



OS/2 Presentation Manager bears strong resemblance to Microsoft's Windows, but porting the two proves no easy task.

down developers will want to port their applications to the Presentation Manager.

But other companies that have spurned Windows said such potential difficulties confirm initial doubts about the Windows/Presentation Manager compatibility issue.

"Microsoft had been saying, 'If you code for Windows, you code for OS/2,' but that just isn't true," said Brad Silverberg, vice-president of research and development at Borland International. "You shouldn't underestimate the effort of porting a Windows application."

To ease the pain of mechan-

Eber quipped.

Systems software and user interface kingpin Microsoft, which provided no code for the graphical interface, is not expected to announce any applications support. In fact, as of press time, company officials had not decided whether Microsoft Chairman Bill Gates would attend the pledging event.

It was also unclear as of press time what effect the joint Sun and AT&T announcement would have on Microsoft's plans to develop a Presentation Manager-like front end for the version of Unix it is co-developing with AT&T for machines based on Intel Corp.'s 80386. Called Unix 386, it has yet to ship.

The Unix graphical user interface element will clearly add to the software development

staff and finances to meet the task at hand. But some developers expressed concern over just how much work the retooling would require.

"Conversion of some kind was expected, but this could be more than anticipated," said Jeff Allen, manager of developer relations for Blyth Software, Inc. in Foster City, Calif.

Microsoft said it hopes to include automatic conversion tools in a future upgrade of the development kit, but it was not clear if the software would be available before the Presentation Manager's expected release in October.

burden and raises the question of when applications fully supporting the interface will ship. Many vendors, including Lotus and Ashton-Tate, appear to have their plates full upgrading existing products and writing for OS/2. And AT&T is not expected to announce tools that will make OS/2 Presentation Manager or Microsoft's Windows applications portable to the new proposed environment.

As a result, industry observers cautioned users not to expect the applications anytime soon.

Despite the wait, the friendly Unix interface is a key part of AT&T's long-term strategy for broadening the user base of Unix.

West Coast senior correspondent Julie Pitta contributed to this report.

Sun courts DOS users

Intel 80386 workstations eye corporate buyers

BY JULIE PITTA
AND ED SCANNELL
CWI STAFF

BOSTON — Sun Microsystems, Inc. last week bland another trail from its traditional engineering stronghold into the front office, introducing two Intel Corp. 80386-based workstations that can run both Unix and Microsoft Corp. MS-DOS applications.

Although the system is expected to boost the Mountain View, Calif., firm's presence in corporate accounts, industry watchers said it may be some time before Sun becomes accepted among those customers.

The Sun386i workstation is offered in 3 million and 5 million instructions per second versions. A standard configuration provides 4M bytes of random-access memory with four expansion slots, allowing a possible 16M bytes of RAM. Both models feature a 1.44M-byte 3½-in. floppy disk drive. Options for hard-disk storage range from 911M to 327M bytes.

Additionally, five different monitors are available, ranging from a 19-in. color monitor to a 15-in. monochrome monitor. Pricing ranges from \$7,990 to \$13,990. Sun said it has already shipped hundreds of units to selected sites.

A software coprocessor supplied by Sun via Phoenix Technologies Ltd. lets the workstation run MS-DOS sessions under Unix. Using a mouse, users can click between MS-DOS and Unix

application and cut and paste text between Unix and MS-DOS windows.

Currently, the company has no plans to offer an OS/2 version of the workstation.

Sun also entered in a version of its SunOS operating system, adding a number of new user-friendly features, including an icon-based desktop manager for the operating system.

Although industry watchers said Sun is hoping to branch out from the technical computing environment in which it first made its name, Sun President and Chief Executive Officer Scott McNeely said the company has already made significant progress in the commercial market. "At a [projected] billion dollars, we're not just selling CAD machines," he said.

The Sun386i will be sold through Sun's direct sales force, OEMs and value-added resellers, with the possibility of retail sales still being reviewed.

"So far, there's not tremendous evidence that corporate MIS wants Unix," said Omri Serin, president of Icom International, a Los Altos, Calif., market research firm. "But the progress of Unix is unstoppable. Eventually, it will penetrate corporations."

"They're not going to take the world by storm," said Michael Orsak, an industry analyst for Robertson, Colman & Stephens. "DOS allows them to get their foot in the door in large corporations. It helps their overall mission."

Bridgework

Sun Microsystems' Sun386i workstations run both SunOS and Microsoft MS-DOS operating systems

	Intel 80386	Intel 80386
Microprocessor	Intel 80386	Intel 80386
Cache speed	33 MHz	33 MHz
Main memory		
RAM*	4M bytes	8M bytes
Maximum	16M bytes	16M bytes
Data bus width	32 bits	32 bits
Systems bus		
Type	33-MHz	33-MHz
Number of slots	Four	Four
Number of expansion slots	Three 16-bit, one 8-bit	Three 16-bit, one 8-bit
Access time	18 msec	18 msec
Storage	3.5-in. floppy	3.5-in. floppy
Color displays		
Formats	14-, 16-, 19-in.	16-, 19-in.
Resolution	1,024 by 768 (14-in.), 1,152 by 900 (16-, 19-in.)	1,152 by 900 (16-, 19-in.)

* Random-access memory

INFORMATION PROVIDED BY SUN MICROSYSTEMS, INC., C/P 04/87

Layoffs imminent as Prime restructures

BY NELL MARGOLIS
CW STAFF

NATICK, Mass. — Prime Computer, Inc. last week restructured its business operations in the wake of its recent purchase of Computervision Corp. But even as the company announced its new corporate reporting chart, reports of imminent layoffs by the CAD/CAM giant, based here, swirled through the industry.

Confirming earlier statements of intent, Prime announced the formation of two separate marketing divisions.

The Computervision division will concentrate on the computer-aided design

and manufacturing (CAD/CAM) market.

The commercial and technical division will center its resources on the markets previously served by Prime.

Fischer retains post

Under the new corporate structure, Robert A. Fischer, president of Computervision at the time of the merger, will remain as president of the Computervision division.

Fischer's commercial and technical division counterpart will be W. L. "Roy" Brubaker, formerly Prime's vice-president of worldwide sales.

A single manufacturing and customer

service organization will support customers of both divisions, Fischer said, as will one systems marketing and development organization.

Within each such organization, Fischer added, resources will be dedicated to each Prime division.

Reports of an approaching layoff of 500 to 1,000 employees as a result of redundancies created by the merger with Computervision spread within hours of the corporate structure announcement.

A company spokesman confirmed that layoffs are in the offing but did not say how many of Prime's 13,500 employees are likely to be dismissed.

"Positions will be eliminated in a number of areas in the company," the spokesman said, "most likely in operations and in corporate support functions."

Sales staff perfo

Manufacturing, where there is excess capacity, is a likely layoff target, according to the spokesman, while direct sales is likely not to be hit at all, according to the spokesman.

Commenting on the imminent end of a Prime record of not laying off employees, the company spokesman said, "When you put two large companies together, there are going to be redundancies."

The company neither confirmed nor denied that the number of layoffs could reach the vast ballpark figure rumored.

AT&T seeks FCC approval for first ISDN rate plan

BY JAMES DALY
CW STAFF

NEW YORK — AT&T filed a tariff with the Federal Communications Commission last week for its first Integrated Services Digital Network (ISDN) service, a networking option that will give users high-speed access to its Megacom voice and Accumat data transmission services.

AT&T's ISDN service will support up to 23 64K bit/sec. voice or data channels over a 1.5M bit/sec. trunk, as defined by the ISDN Primary Rate Interface protocol. It will be the first ISDN Primary Rate Interface service and the first long-distance ISDN service offered in the U.S.

"This will make ISDN available over the whole national geography," said Thomas Nolle, president of Haddonfield, N.J.-based consulting firm CIMI Corp. The long distance service is "the only pervasive form of ISDN possible, because it doesn't require the concurrence of a half-dozen Bell operating companies to make a connection." Two weeks ago, Illinois Bell became the first regional Bell operating company to file a commercial ISDN tariff.

AT&T's tariff, which was filed four months behind schedule, includes a Call-by-Call Service Selection option to allocate 64K bit/sec. channels within the trunk to various AT&T services. A second option is Info-2, an automatic number identification capability that forwards the calling party's billing number to the ISDN customer's premises.

The Call-by-Call Service Selection is "what will make ISDN go," said W. Edward Hodgson, manager of computers and communications at Westinghouse Electric Corp., adding that his company plans to implement AT&T's service.

AT&T plans a \$3,000 nonrecurring charge to set up an ISDN link plus a \$400 charge per Primary Rate Interface link. Call-by-Call Service Selection carries a one-time \$250 charge, plus a \$200 charge for reallocation channels within a call-by-call access group. Channels can be reallocated within 24 hours. Info-2 costs three cents for each Info-2 number delivered plus a one-time fee of \$200.

The tariff should become available within 90 days, pending FCC approval, in 18 U.S. cities.

So, if you don't have said INCALL...call Innovation and we'll send you a Free No Obligation 90 Day Trial of a system that does...and you will receive Free, the deluxe 1987 Guinness Book of World Records.

From the "Guinness Book of World Records" 1988

ARCHIVE CONTROL FILE

Available for IBM, OS, VSI, MVS and MVS/XA

INNOVATION DATA PROCESSING

Innovation Plaza, 275 Paterson Ave., Little Falls, NJ 07424 • (201) 890-7300

HP boosts minis across the board

Precision Architecture rapid-fire releases cover entire spectrum

BY JAMES A. MARTEN
AND ALAN L. PER
ON BEHALF

NEW YORK—In hopes of gaining an edge on rivals Digital Equipment Corp. and IBM, Hewlett-Packard Co. last week announced minicomputers across its entire product range, from the low-end Micro 3000 to a high-end Spectrum model.

The press conference held here last week was to showcase HP's Precision Architecture, a reduced instruction set computing (RISC) environment the company is positioning as its platform for the future.

Because the first machines in the new line, the HP 3000 Models 930 and 950, were delayed for more than a year by software bugs, HP is now trying to gain back some momentum by releasing products at a rapid rate.

Takes the broad road

"This gives us a product line that is as broad as or broader than DEC's—and one that overlaps four architectures and operating systems from IBM," said Doug Spreng, general manager of HP's commercial systems group.

Analysts were generally upbeat about HP's chances for gaining ground on its minicomputer competitors. "The ease of field upgradability, coupled with

their price/performance, creates a new benchmark against what other vendors will do," said Christine Hughes, an analyst at the Gartner Group, Inc.

With its Precision Architecture environment, HP's product line is better positioned than any other vendor's to take advantage of the transition to distributed networked computing, according to Hughes.

provides 50% greater performance than the previous HP 3000 high-end machine, the 7-MIPS Model 950, according to HP's Spreng. In addition, Model 950 users can upgrade to the Model 955 with add-in boards at a cost of \$120,000.

HP expects to increase the Model 955's performance at a compound annual rate of 40% to

Model 925, with 3.2 MIPS and support for 152 users at \$40,000; and the Model 925LX, the new low end of the Spectrum line, with 3.2 MIPS and support for 32 users at \$50,000.

The Model 925LX can be upgraded to the Model 925, as can the 925 be to the 935, through what Spreng called a "simple board swap." In comparison, upgrading within the IBM 9370 family or DEC VAX line requires a box swap, he noted.

Gone from the Spectrum line-up is the Model 930. It was announced with the Model 950 in

The Model 930 will continue to be supported by HP, but manufacturing will discontinue this year, according to Spreng. Users who ordered or installed a Model 930 will receive full credits toward the purchase of a Model 950, the company said.

New in Unix

HP also introduced three models in its HP 9000 series of multi-user systems based on HP-UX, the company's version of the Unix operating system. The Model 835S supports up to 30 users and costs \$45,000; the 835SE supports up to 70 users and costs \$99,000. Both will be available this summer.

The HP 9000 Model 855S is said to offer performance boosts of more than 50% over the previous high-end system, the Model 850S. Scheduled for availability in early 1989, the Model 855S costs \$320,000.

HP is targeting small business, branch offices and company departments with two additions to its Micro 3000 line. The Micro 3000LX, priced at \$10,950, comes standard with 2M bytes of memory and five expansion ports and supports up to eight users.

The Micro 3000GX comes standard with 2M bytes of memory, supports up to 16 users, offers fast expansion ports and costs \$15,950.

The Micro 3000 series is not based on HP's Precision Architecture because a less expensive approach was needed to keep the low-end competitive, according to Spreng.

Range of the Spectrum

Hewlett-Packard fills out its reduced instruction set computing-based HP 3000 family



Millions of instructions per second
Replaces the Model 930

cording to Michael Milikin of Patricia Seybold's Office Computing Group in Boston.

Among the announcements was the HP 3000 Model 955, an 11 million instructions per second (MIPS) system for commercial applications designed to compete in price and performance with DEC's VAX 8840 and IBM's high-end 4381.

The Model 955 reportedly

50%, Spreng said. He declined to say how that increase will be accomplished but added that the company is investigating a variety of means, including quadratic symmetrical processing—similar to what DEC has announced for its Polar Star project.

The HP 3000 line was further expanded with the Model 935, a 6-MIPS system that supports up to 240 users for \$150,000; the

February 1986, but both systems were delayed for more than a year because of software bugs.

By the time the Model 930 roll-out began last fall, the majority of HP customers were opting for the more expandable, more efficient Model 950. The Model 950 accounts for about 65% to 75% of all Spectrum models being shipped today, according to Kidder, Peabody & Co.

Silverlake

FROM PAGE 1

IBM has given Silverlake prototypes to developers or is allowing them to test their software on Silverlake machines on IBM premises.

• With Silverlake, IBM will probably introduce a new version of the RPG language that an IBM official has referred to as RPG-IV. The new version reportedly will include RPG-II and RPG-III and will be offered in SAA and non-SAA versions.

• According to a developer who has had a Silverlake prototype for six months, Silverlake will run Systems/36 source code after being compiled to run on the new machine. Systems/36 software, however, will run in object code, he said. Ray Hughes, president of CRT Distribution Systems, Inc. in Waukegan, Wis., said there will also be a so-called "Silverlake-SAA" mode.

Hughes said that adapting his firm's Systems/36 programs to run in SAA mode was not difficult. Performing the conversion meant changing the Systems/36 data base features to an SQL-type data base.

He also said that Systems/36

programs might not perform as well on Silverlake as they do on the Systems/36 because the latter's source code must be compiled to run on Silverlake.

'No problem'

John Birch, corporate vice-president of McCormack & Dodge Corp., said he has been given all

THE System/38 and Silverlake architectures are closely related," so converting the System/38 relational data base with an SQL-based data base will not be a very difficult task.

JOHN BIRCH
McCORMACK & DODGE CORP.

the information necessary to compile Systems/36 programs to run on Silverlake. He added that he has taken his firm's Systems/36 and 38 applications to IBM's Rochester, Minn., facility and run them on an engineering model of Silverlake. "We are very confident about compatibility," he said.

Birch said that although a Systems/36 user must have a system/36 developer compile his program to run on Silverlake, a

System/38 user should be able to run the program without alterations.

"The Systems/38 and Silverlake architectures are closely related," Birch said. Converting the Systems/38 relational data base with an SQL-based data base will not be a very difficult task, he added.

with SQL, for a while so that we can get familiar with the new box," because the Silverlake data base management system will require SQL, Nimmy said. Insight expects to receive a prototype system soon, she added.

Nimmy said she understands that there will be two versions of RPG-IV: One will be a migration path for current Systems/36 and SAA users, and the other will be SAA-compliant.

Necessary conversion

Nimmy agreed that Systems/36 developers will be required to convert Systems/36 code to run on Silverlake but said such conversion will not be required in the case of Systems/38 programs.

She suggested that any performance lag that Systems/36 users might experience will be compensated for by increased performance in Silverlake. Nimmy said IBM officials indicated to her that performance will be boosted by the use of new technology in Silverlake.

However, because Silverlake's SAA-compliant native mode will be the fastest and will include the migration potential promised with SAA, developers will be most attracted to write in the new mode.

BMC partners sue for \$20M

HOUSTON—Two former partners of BMC Software, Inc. in Sugar Land, Texas, have filed suit against the third partner and present owner, John Moores, in Fort Bend County Court.

The suit was filed by Scott Boulet of Amherst, Mass., and Danielle Cloer of Harris County, Texas. Cloer and Moores were the original founders of BMC. Richard E. Barry, also of Harris County, has filed a complaint against BMC as well.

The 240-employee firm produces utilities for IBM's MVS and VM and reported \$40 million in revenue in 1987.

The suit alleges that Barry and Cloer were instrumental in developing the BMC product line in exchange for receiving one-third of the gross sales on the software. The suit charges the firm reneged on the agreement after July 1982.

BMC President Rick Hoesley said he cannot comment on the suit but added, "We have done nothing wrong." The suit seeks \$20 million in damages.

ORACLE, YOUR HARDWARE-INDEPENDENT SOFTWARE SOLUTION

With the ORACLE® distributed relational DBMS, you'll never be locked into a specific hardware technology.

In this year's Software User Survey,* one company made history in all three categories of DBMS user preference.

For minicomputers, Oracle is the number-one independent software vendor for the second year in a row. *Digital News*[†] ranks Oracle as the number-one overall software vendor in the entire DEC marketplace. So does The Gartner Group.[‡]

Oracle tied for main-frame honors with the former champion of independent software companies. In the MVS and VM world, ORACLE is second to no one.

And Oracle made the Top-5 list in the most competitive arena of all: microcomputers. This is especially significant, since the voting was done BEFORE the newest version of the

ORACLE relational DBMS was announced for 286/386-based PCs.

Now you can write OS/2 applications without waiting for OS/2.

Mainframes, minis and micros — all running the same ORACLE. Not just compatible. Not downsized subsets. They all run the same ORACLE.

The market has voted for ORACLE, the hardware-independent software solution.

We've been saying SQL compatibility, portability across micros/minis/mainframes and SQL*Star's distributed architecture connectivity make ORACLE a triple-crown winner in your company's DBMS strategy. Now, the

ing it, too. Don't settle for anything less

Find out what ORACLE could mean in your own future. Call 1-800-345-DBMS today and register to attend the next ORACLE seminar in your area. Or fill out the attached coupon.



ORACLE®

The Hardware-Independent Software Solution

Call 1-800-345-BOWS, ext. 105

San Diego Parkway • Belmont, CA 94002 • World Headquarters (415) 355-2000
 Calgary (403) 243-6502 • Ottawa (613) 235-2511 • London (0143) 255-0701
 Toronto (416) 355-7700 • CHASSIS Systems Australia PT-2-000-0000
 CHASSIS Europe 44-044-0911 • CHASSIS Systems Hong Kong 003-5-2000-00

* 100% Refillable New Spray, sold by Refillable Now, © 1997 by Sundry Prod. Company, Inc.
† Digital News, December 1, 1995. ‡ Sundry Group currently available research.
© 1997 by Sundry Corp. 0045127 is a reg. trademark. 33L-Spr is a trademark of Sundry Corp.
The other companies mentioned are common registered trademarks. 1996

U.S. SUMMARY

AL	Anniston				Feb 24	19
AL	Braselton				Feb 24	19
AR	Arkadelphia				Feb 24	19
CA	Little Rock				Feb 24	19
CA	San Francisco	Feb 22	18	Mar 1	27	19
	Costa Mesa				Feb 24	19
	Hayward Beach	Feb 18	18	Mar 1	27	19
	Ontario				Feb 24	19
	San Diego	Feb 18	18	Mar 1	27	19
	San Francisco	Feb 11	18	Mar 1	27	19
	San Jose	Feb 11	18	Mar 1	27	19
	San Bernardino				Feb 24	19
	Tempe				Feb 24	19
CO	Fort Collins	Feb 14	18	Mar 1	27	19
CT	Springfield				Feb 24	19
CT	Hartford				Feb 24	19
DE	Wilmington				Feb 24	19
FL	Orlando				Feb 24	19
	St. Petersburg				Feb 24	19
	Thalass				Feb 24	19
GA	Atlanta	Feb 15	18	Mar 1	27	19
IA	Des Moines				Feb 24	19
ID	Boise				Feb 24	19
IL	Chicago	Feb 15	18	Mar 1	27	19
IN	Indianapolis	Feb 14	18	Mar 1	27	19
KY	Louisville				Feb 24	19
LA	Baton Rouge				Feb 24	19
MA	Boston				Feb 24	19
	Springfield				Feb 24	19
	Worcester				Feb 24	19
MD	Baltimore	Feb 14	18	Mar 1	27	19
ME	Portland				Feb 24	19
	Concord	Feb 15	18	Mar 1	27	19
MI	Grand Rapids				Feb 24	19
MO	Kansas City	Feb 14	18	Mar 1	27	19
NC	Charlotte				Feb 24	19
	Charlotte	Feb 14	18	Mar 1	27	19
	Salisbury				Feb 24	19
NE	Omaha				Feb 24	19
NJ	New York	Feb 15	18	Mar 1	27	19
	Jersey City				Feb 24	19
	Manassas	Feb 14	18	Mar 1	27	19
NY	Long Beach				Feb 24	19
	Albany				Feb 24	19
OH	Columbus	Feb 11	18	Mar 1	27	19
OH	Cleveland	Feb 11	18	Mar 1	27	19
OK	Oklahoma City				Feb 24	19
PA	Philadelphia	Feb 11	18	Mar 1	27	19
	Philadelphia	Feb 11	18	Mar 1	27	19
	Pittsburgh				Feb 24	19
RI	Providence	Feb 14	18	Mar 1	27	19
SC	Waxy Forge	Feb 14	18	Mar 1	27	19
SD	Columbia				Feb 24	19
TX	Houston				Feb 24	19
	Memphis				Feb 24	19
TX	Austin				Feb 24	19
	Fort Worth	Feb 14	18	Mar 1	27	19
	El Paso				Feb 24	19
	San Antonio				Feb 24	19
UT	Salt Lake City	Feb 14	18	Mar 1	27	19
VA	Richmond				Feb 24	19
	Charlottesville				Feb 24	19
VT	Barre				Feb 24	19
WA	Seattle				Feb 24	19
WI	Madison	Feb 14	18	Mar 1	27	19

CANADIAN SUMMARS

To register for Canadian seminars, please call the office nearest you: Calgary 406-266-2021; Ottawa 613-236-2361; Quebec 514-921-6796; Toronto 416-866-7798.

Category		Apr 14
Edmonton		Feb 8
Halifax	Feb 17	Apr 2
Kingston	Feb 05	Apr 11
London	Feb 25	Apr 09
Montreal	Feb 24	Mar 22
Ottawa	Feb 04	Mar 03
Quebec	Feb 02	Mar 01
Rapids		Apr 09
Saskatoon		Mar 18
Thunder	Feb 05	Mar 08
Vancouver		Apr 12
Victoria		Feb 23
Winnipeg		Feb 15

After: National Seminar Coordinator
Oasis Corporation - 30 Davis Drive

☐ My business card or letterhead is attached. Please enroll me in the **FREE ORACLE** seminar to be held

44

CONSTRUCTION

New face in supercomputing

BY ALAN ALPER
CHICAGO

NEW YORK — Graphics hardware maker Evans & Sutherland last week became an unlikely player in the supercomputer arena, disclosing that it has been de-

veloping a general-purpose supercomputer for the past 18 months.

Evans & Sutherland said that the machine it will introduce later this year will exceed the scalar processing performance of Cray Research, Inc. computers.

The supercomputer will be built around a moderately parallel architecture, scalable to eight processors, that uses custom-designed very large-scale integration CMOS technology. It will contain a tightly coupled graphics engine, support up to 2G

bytes of memory and run the University of California at Berkeley's Unix 4.2, according to Robert Stevenson, vice-president of marketing at the firm's computer division.

Each processor will contain two computational units offering 50% of the performance of IBM's 3090 mainframe and shared access to the system's large memory space, Stevenson

said. The machine's 64 I/O channels will operate at 20M bytes/sec. and will have access to hundreds of gigabytes of disk storage, Stevenson said.

In contrast to other supercomputers that operate in a batch-oriented mode, users will work interactively with Evans & Sutherland's supercomputer, Stevenson said. That will enable users performing graphically intensive applications to see the results of their work almost immediately, he contended.

In its largest configuration, the machine is expected to operate at more than one billion instructions per second and deliver one billion floating-point operations per second of vector performance when it goes into production early next year, Evans & Sutherland claimed. It will range in price from \$3 million to \$8 million, Stevenson noted.

Evans & Sutherland said it expects to compete with Cray, ETA Systems, Inc. and IBM, which offers a vector-processing facility with its 3090. The firm is hoping its reputation within the scientific and technical market, in both the commercial and government segments, will help ease its entry into the business.

"We'll be selling to the same customers who use our simulation and graphics systems products," Stevenson said. "We're not XYZ start-up company."

Marsha Brooks, an analyst with International Data Corp. in Framingham, Mass., said Evans & Sutherland has a well-conceived architectural approach and is properly positioning its product. "There's definitely room for another player in the very high-performance portion of the technical computing market," she said. "They have a strong background in technical applications, a good reputation among their customers and a good chance of succeeding by pushing price/performance."

Balanced processing
Evans & Sutherland's supercomputer will reportedly offer balanced scalar and vector processing, in contrast to the emphasis on vector processing by other supercomputers and minisupercomputers.

The company took a balanced approach because many computing problems are not easily vectorizable, Stevenson claimed. "Some users we talked to said that at 70% vectorization, they were only getting 12% of their machine's performance. That's an inefficient approach; they're throwing away resources."

Evans & Sutherland established a computer development and marketing division in Mountain View, Calif., 18 months ago, said Jean-Yves Leclerc, the division's president. Evans & Sutherland expects to have spent about \$20 million on the machine's development, he said.

If...

VSAM performance and integrity is an issue.

Then...

Goal Systems International DCM-VSAM

The best supported VSAM product line in the industry.

FAVER—VSAM file management system with comprehensive reorganization and backup/restore capability. Available for MVS and VSE.

VSAMAID—Tune VSAM automatically while eliminating inefficiencies—a cluster modelling, performance and capacity planning tool. Available for MVS and VSE.

MASTERCAT—An online and batch VSAM catalog information product for MVS and VSE.

COMPRESSOR/MVS—Provides compression of VSAM datasets that can triple disk capacity. *

To Find Quality Call 800-848-4640.



Goal Systems International • 7965 N. High Street • Columbus, Ohio 43235 • 800-848-4640
Goal Systems International S.A.R.L. • 88 avenue de Wagram • 75017 Paris, France • Phone: (1)42 67 55 55 • Telex: 641.094

WE WANT YOU TO FORGET EVERYTHING YOU KNOW ABOUT UFO.

Because unless you're among the 2000 current users of the industry's leading application development system, you don't know how much UFO has changed since we acquired the product 18 months ago.

And has it changed.

Take resource efficiency. Now with fully re-entrant, compiled code, UFO is the most resource-efficient product of its kind. A *Datapro* study* confirms it: *"UFO Productivity System has proven to utilize about 40% less storage and operates faster...than competing products."*

And now it's fully portable across CICS, CMS, TSO, VM—even the 9370. For even more flexibility, UFO now operates in MVS/XA and gives users efficient on-line access to their DB2 and SQL data bases.

Product support? We've done everything from writing completely new documentation, to speeding our response time to user requests for assistance by a full 66%, to sponsoring enthusiastically attended UFO User Groups across the country.

All of which is tangible proof we're devoting considerable resources to UFO. Which isn't surprising.

Business Week recently named us among the top 15 U.S. companies in percentage of sales poured back into research and development.

So when you're looking for an application development system, we have one further request. Remember to look at UFO.

For a *Free UFO Intro Diskette*, or to arrange a *30-Day Trial*, call toll-free 800-642-0177. In Canada, call 416-671-2272. In Europe, call 44-1-631-3696.

 **On-Line Software**
INTERNATIONAL

Authorities in IBM Software

UFO Productivity System. The Application Development System Worth Remembering.

THE SAS[®]

Fourth Generation Software

Now there's one software solution for all your information Center needs. One solution for all your applications. One solution for all your data.

fill-to-the-blank screens. On-line help facilities make it easy to handle every application, quickly and accurately.

share, and present results with the SAS System. Plus you can file requests and applicant programs, and benefit from the results.



SYSTEM

for Your Information Center.

were resources or system usage, test data bases, and run production programs.

CDC refurbishes Cyber line, aims to revive profits

BY JEAN S. BOZMAN
COWLEY

MINNEAPOLIS — As bad news began to circulate about its financial position last week, Control Data Corp. took the second of three major steps toward reviving its fortunes, by announcing a revamped Cyber mainframe product line.

The Cyber 930 machines, scheduled for July shipment, emerged just five weeks after high-end Cyber 990s were announced — and two weeks before the planned debut of a new mid-range machine, the Cyber 960, CDC spokesmen said.

Next Monday, CDC is also expected to make significant functional changes to its NOS/VE operating system that will provide greater connectivity for Cyber mainframes by supporting Transmission Control Protocol/Internet Protocol and Ethernet communications standards, CDC spokesmen said.

Timing essential

The revamping of CDC's mainframe line could not have come at a more critical time. After spending the mid-1980s in the throes of a corporate reorganization, the company is just beginning to field new product lines and to reach profitability again.

"Control Data is gradually making progress, but the rate of progress is being retarded by trouble in the area of its peripherals and educational divisions, both of which lost money last year," said Mike Geran, senior research analyst with the Nikko Securities Company International, Inc. in New York. "CDC sold \$975 million in disk drives and other peripherals last year and still lost money."

CDC is banking on the fact that the Cyber 930s have proven to be entry points into new accounts, both in the U.S. and abroad. CDC's traditional mainframe base has been steadily eroding, industry analysts said. There are just more than 1,000 Cyber installations worldwide.

Reports deceiving

CDC's annual report, released last week, shows that the firm's \$3.37 billion in revenue masks some underlying weaknesses, including the following:

- CDC operated with a negative cash flow in 1987, although it realized a profit from the \$313 million sale of its Commercial Credit business unit. The sale allowed CDC to eke out a \$19.3 million profit last year — the first year in three that the company has shown a profit.
- The company ended its fiscal year without carrying any domestic lines of bank credit. CDC had to pay off all domestic bank loans after issuing junk bonds in 1987, Geran said. Overseas

banks provide CDC's continuing financing, he added.

• CDC said there were cost overruns of \$2.5 million associated with the \$50 million development cost of the Cyber 930. Financed by a limited partnership formed in 1982, the machine was introduced in March

1987 as the company's first departmental computer. CDC chose to pursue the limited partnership so that it could begin designs for the Cyber 930 while the company was being reorganized.

Last week, CDC provided a dual-processor 930, called the Cyber 932-32, that is priced at

\$213,800 for a unit with 16M bytes of main memory. The 932-32 acts as a symmetrical multiprocessor, since either CPU can initiate I/O requests or process incoming jobs.

Both new Cyber 930 uni-processors — the \$60,000 Cyber 932-11 and the \$125,900

Cyber 932-31 — have redesigned 8M-byte CPUs that are powered by fewer printed-circuit boards than older 930 models. New 64M-byte memory boards, powered by 1M-bit chips, are so compact that a second processor can be added to the 930 cabinet as an \$80,000 field upgrade, according to Mike Deck, a Cyber 930 product manager.

For global business solutions, The world turns



As the world's largest independent systems software company, Software AG is well positioned to provide the comprehensive, portable solutions that today's high-volume, multi-vendor computer environments demand. Software AG technologies form a family of more than 35 outstanding products, all integrated within ISA: The Open Integrated Software Architecture.™

Over the last 15 years, programmers and end users at more than 3,000 computer sites around the world have come to rely on the value of Software AG products. For these tens of thousands of users, Software AG has become synonymous with advanced information management technologies.

Today, new Software AG directions include:

- ADABAS 5, an information management technology that goes beyond Relational/SQL data management;
- NATURAL 2, with advanced 4th Generation functionality for applications development capabilities beyond COBOL;
- New offerings in the CASE arena, represented by our NATURAL Engineering Series; and
- A growing family of products for VAX users, with performance, functionality, portability, and integration beyond that of any other vendor.

Wang tweaks image-storing system

Adds AT conversion board, hopes to drive wedge into rivals' sites

BY JEAN S. BOZMAN
CW EDITOR

CHICAGO — Looking to drive its Wang Integrated Image Systems (WIS) deeper into installations dominated by other ven-

dors, Wang Laboratories, Inc. last week broadly enhanced the WIS line and introduced an add-on board for the IBM Personal Computer.

The year-old WIS, which turns a Wang VS computer into a

filing cabinet for thousands of digitally stored images, will be responsible for \$100 million in sales by October, or a little less than 5% of the company's \$2.84 billion in annual revenue, according to Wang managers.

The most dramatic of the new WIS products is a printed-circuit board that will convert an IBM PC AT or IBM-compatible model into a WIS workstation. Until now, only Wang Advanced Professional Computers could be used to retrieve and display image files from a Wang VS mini-computer.

The PC AT upgrade, which is slated to be available during the

third quarter, will cost \$1,200 for the board and a 16-in. full-page monitor, according to Ron Arenson, senior marketing manager for Wang applications products. "A large company with hundreds or thousands of ATs can now make them capable of displaying images through the addition of the WIS board," Arenson explained.

Wang's AT add-on boards were designed to make the firm's imaging technology more attractive to large IBM sites that might consider buying the \$200,000 Wang VS computer that supports WIS.

Limited time only

As an added incentive, Wang also recently established a trial program that allows corporations to try WIS for three months for a flat fee of \$16,500. Arenson said Wang is acutely aware that it must grab market share before major competitors like IBM and Digital Equipment Corp. unveil competing imaging systems.

"We were told by consultants that we had a 12- to 18-month lead on the competition," Arenson said, "and that lead time is just about over. There is very little question that all our major competitors will be in the imaging market fairly soon."

Other new WIS products include two preconfigured imaging workstations based on Wang Professional Computer 246s. One workstation, priced at \$6,940, displays three image windows with 100 dot/in. resolution, while the other, priced at \$7,940, displays two windows at 200 dot/in.

For image-intensive applications, Wang introduced the 4620 Image Workstation, a \$7,940 terminal that uses a mouse to manipulate on-screen icons for document selection.

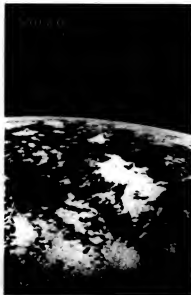
Fax server coming

To promote the networking of WIS, Wang said, it plans to market a VS facsimile server this fall. The server would allow Wang Office electronic mail messages to be distributed to remote facsimile machines, even on a worldwide basis. The \$13,900 VS Fax Server hardware and software is compatible with any industry-standard Group III facsimile machine, Wang spokesmen said.

Finally, Wang added an intelligent optical character recognition (OCR) device that it said allows paper documents scanned into a WIS to be automatically indexed in a WIS data base. The \$34,630 OCR device and a \$7,200 controller that interfaces with the VS computer are scheduled for shipment in the fourth quarter, Wang said.

Wang's hardware announcements were accompanied by the introduction of nine WIS off-the-shelf applications and eight WIS software packages developed by third-party vendors.

to Software AG.



And all of these technologies fit into the open, flexible structure of ISA, whose integration within open parameters ensures operability within different environments and adaptability to future needs.

But there's more to our global solutions than technology alone. There's also our unique network of more than 80 worldwide offices, for product development, sales, and service. This network provides a pool of talent that benefits all users of Software AG products, everywhere.

All of which helps explain why, for global solutions to its business problems, the world turns to Software AG.

For more information about
Software AG, call toll-free:
1-800-843-9534

(In Virginia or Canada, call 703-860-5050)

SOFTWARE AG
PROGRAMMING BUSINESS SUCCESS

ADAMAS 1, NATURAL 2, NATURAL Engineering Series, and ISA are trademarks of Software AG. VLSX is a trademark of Digital Equipment Corporation. ©1988 Software AG of North America, Inc.

DEC wriggles way into WORM market

BY STANLEY GIBSON
CHIEF STAFF

MARLBORO, Mass. — Digital Equipment Corp. last week slid its first write-once ready-many (WORM) optical disk drive into the market but opted for the more established 12-in. format rather than the newer, but less widely used, 5¼-in. size.

DEC's RV-20 optical disk drive handles 12-in. disks capable of storing 1G byte of data on each side.

DEC also announced a software package called Storage Library System, which

reportedly can help users store and manipulate data on DEC's RV-20 subsystem as well as on tape subsystems. The library system can prevent the wrong volume from being mounted and the wrong user from seeing it, DEC said.

DEC added that it expects the RV-20 to find acceptance in the financial services, health care, engineering and pharmaceutical industries, in which long-term storage of important data is necessary.

Analysts were undecided on the drive's chances for success. "The DEC WORM drive will be regarded as an advancement in the eyes of the computer in-

dustry, but the reality is that it's a total dog. It's at least a generation behind," asserted Jay Bretzmann, a storage systems analyst at International Data Corp.

However, Louise Biggs, a storage analyst at Dataquest, Inc., was more positive. "I thought it was a great announcement. They're the second serious systems manufacturer, after Tandem, to integrate optical drives. It's a real positive indication for the optical industry. The 12-in. technology is proven and thoroughly tested. Systems vendors, such as DEC, are much more cautious than third-party vendors about what they will integrate."

Bretzmann, however, said that DEC should have utilized 5¼-in. media because major technological strides are being made in that area and it is considerably less expensive.

"A third party could come out with a 5¼-in. product in the next year that could blow [DEC] away," Bretzmann said. DEC-compatible optical storage devices now available from third parties are already generally as good as, if not better than, DEC's, he added.

The RV-20 subsystem is available immediately for BI and Q-bus systems. Unix support will be available in the future, according to DEC. Currently, the system is offered under DEC's VMS operating system, although DEC said support under its Ultrix will be offered later.

The RV-20 consists of an adapter card connected to a master drive, which consists of a controller and one drive. Three additional slave drives may be connected.

The RV-20 is priced at \$30,000. Additional RV-20 drives cost \$25,000, and each optical disk is priced at \$400. The subsystems and media are available 30 days after receipt of order, DEC said.

The Storage Library System, scheduled to ship next month, will be licensed according to number of users, with fees starting at \$500.

Our DB2 software is up and running.

The Leader

The Perfect Application

INTEGRAL SYSTEMS

IBM DB2 Software

DB2



Apple slices up sales, marketing

BY JULIE PITTA
CHIEF STAFF

CUPERTINO, Calif. — Apple Computer, Inc. last week restructured its sales and marketing organization into three separate units addressing different geographic regions. The regional distinction reflects the growing importance of international markets to the company, an Apple spokeswoman said.

The company also established an end-user services organization, allowing large end users to obtain service directly from Apple on a fee basis.

As a result of the restructuring, the Apple sales and marketing division is now composed of Apple USA, Apple Europe and Apple Pacific. Last year, international sales accounted for one-third of Apple's revenue.

Heading Apple USA will be Charles M. Boesenberg, former senior vice-president of U.S. sales and marketing and now vice-president and group executive for the new unit.

Jerry Maloc, previously vice-president and general manager of Apple's Central region, has been appointed vice-president of the Business Markets Group. Apple is searching for an executive to direct the Education Markets Group, which in the interim will be headed by Boesenberg.

The Marketing and Support Group will be led by Joseph Schoendorf, who joined Apple last year as vice-president of marketing.

James Buckley, formerly sales manager for North Central operations, has been promoted to vice-president and general manager of the Central Marketing Group.

"Apple International has been split into Apple Europe and Apple Pacific, encompassing Canada, Australia and Japan and exploring opportunities in Latin America and the Pacific Rim region."

We've Decided To Call Off The Competition Between IBM and IRMA.



It no longer matters which 3270 emulation will become the reigning standard.

Because now you can have compatibility with both IBM and IRMA using AST's two new micro-to-mainframe communications solutions: AST-3270/CoaxIIA™ for IBM Personal System/2™ Models 50, 60 and 80; and AST-3270/CoaxII™ for AST Premium™ Computer products and PC-based systems.

Which means you can run all existing application software designed to run on either IBM

or IRMA hardware today. Or take advantage of our new family of high-function, 3270 emulation software for CUT, DFT and graphics modes.

Whichever software you choose,

your organization's investment will be protected from obsolescence caused by the introduction of new 3270 devices or protocols.

Because built into the AST-3270/CoaxII family are custom processors enabling future modification of existing soft-loadable instruction sets, or even the development of totally new instruction sets.

So, whenever new terminal devices or new protocols come on the market, AST will offer diskette-based microcode upgrades.

It's that simple.

And a lot less trouble.

Next time you need to make a micro-to-mainframe communication choice, go for a knockout and choose to have it all from AST.

For information on our trial

evaluation program call us today (714) 863-1480, or fill out the coupon below and mail it to AST Research, Inc., 2121 Alton Ave., Irvine, CA 92714-4992.

AST
RESEARCH INC.

Yes, I want more information on AST-3270/CoaxII solutions.

☐ Have an AST Representative call me.

☐ Send me more information on AST's trial evaluation program.

☐ AST-3270/CoaxII
☐ AST-3270/CoaxIIA

Name

Title

Company

Address

City State Zip

Phone ()

AST Research, Inc., 2121 Alton Ave., Irvine, CA 92714-4992. Attn: M.C.

COMPUTERWORLD 4/11/86

AST markets products worldwide—in Europe and the Middle East call 441 566 4300; in the Far East call 852 5 717233; in Canada call 416 836 7314. AST and AST logo registered and AST Premium, AST-3270/CoaxII and AST-3270/CoaxIIA trademarks AST Research, Inc. IBM registered and Personal System/2 trademark International Business Machines Corp. IRMA registered trademark Digital Communication Assoc. Copyright © 1987 AST Research, Inc. All rights reserved.

EDITORIAL

Beyond promises

THE SPECTER OF personal computer myopia — the vision of a world where everything except microprocessor-based hardware is incidental to the professional computing environment — is threatening to take a new twist.

The high priests of this vision are now throwing superminis onto the mainframe pyre, pointing to the faltering market performance of DEC and others as proof positive.

They also point to the heightened demand for local-area network servers relative to the slackening demand for minis and superminis as further evidence of the inexorable march to smallness in system design.

Instead of listening to this high-tech hoopla, perhaps it is a better idea to heed the message that is showing up regularly in the business press: The greatest threat to American competitiveness is the fixation on the short term.

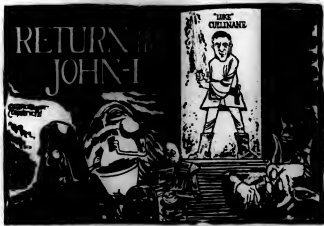
Ironically, this fixation is promoted within the business media, where quarterly performance gains so much attention at the expense of real trends. This is a particularly important point for information professionals to comprehend, because their environment is increasingly tied to the long-term plans and goals of their companies.

The fact is that the relatively slack performance of some minicomputer makers can be traced to product cycles, as well as to general uncertainty about the U.S. economy in this election year. DEC is on the downward slope in a major product life cycle, while Hewlett-Packard is just mounting the up-side of the cycle with its Spectrum series, and HP's market performance reflects this.

There is absolutely no denying the vital role to be played by microprocessor-based distributed systems in information systems of the 1990s. But it is crazy to assume — as the high priests would have us do — that technology stands still in some segments while it races ahead in others. The DEC PDP-11s of 15 years ago appear archaic next to the superminis of today, which won't hold a candle to their own offspring 10 years hence.

Widely, the vast majority of large businesses appear to be taking a cautious approach to implementing PC networks other than in self-contained situations. The reasons are many, including the limitations of the microprocessor and PC operating systems for large, multiuser configurations; the lack of progress in developing true distributed data base technology that can maintain integrity in a large-scale environment; and the simple fact that a million instructions per second on a mini or mainframe is not at all like a MIPS on a micro.

Despite the 16M-byte potential address space of IBM's Personal Computer AT, practical applications tapping more than 640K bytes were never developed in the four-year life span of that machine. Serious systems development cannot live on promises.



LETTERS TO THE EDITOR

Debate continues over object-code only

Regarding the object-code only (OCO) article (CW, Feb. 8), the view from the mountain top is much nicer than it is from the trenches.

In the IBM VM world, OCO has made the job harder for the troops. In the past, we could debug the problems in bringing up a new release of our operating system. Now we cannot, and IBM's support center is not much help. So instead of improving migration in the complex VM shop, it has slowed down migration. Further, it has made migration more expensive. Instead of fixing the problems, we have to talk to someone at IBM who might be able to fix it.

The story as presented by Peter Schneider is much rosier than it is viewed by many of us. We see new features misimplemented in new releases that we cannot change. The full-screen support of VM/SP Release 5 CMS is a classic example. The company promised an exit, and we have been given excuses.

I think IBM's OCO policy has had one beneficial effect. We certainly look much more closely at Brand X software vendors that provide source than we might have otherwise.

T. F. Johnston
Manager, Systems
Programming
Stanford Linear
Accelerator Center
Stanford University
Stanford, Calif.

strength of many of IBM's software products has lain in my ability to tailor them to my environment. Changes that make business sense for some installations might not for others, and it may be difficult to justify inclusion in subsequent product releases.

I realize that modifications cause maintenance problems for myself and IBM. But it is important to remember that my business is to provide performance and functionality to my user community, not to make things easy. Most shops do not modify IBM code lightly, performing a serious cost/benefit analysis before doing so. IBM apparently considers itself more capable than its customers of managing customers' environments.

IBM has attempted to manage customers by stating that exits and other interfaces will be supplied to replace the need for access to the actual code. I doubt that these new exits will be available at all except in cases of "insufficient demonstrated need," leaving customers with specialized needs to look to other vendors or do without.

I am not willing to sacrifice my ability to serve my users to solve IBM's problems.

J. R. Garrett
Manager
Technical Services
Fina Oil and Chemical Co.
Dallas

I enjoyed the discussion of IBM's object-code only policy. However, I must take exception to Martin Goetz's comments regarding IBM's DB2.

Goetz argued that "the only interface to DB2 is SQL," and that this limited the capabilities

to build complementary software for DB2. One of DB2's primary objectives is to guarantee the integrity of DB2 data.

However, in manuals for DB2, the internal structures of the DB2 data areas are rigorously defined. This information can and has been used to develop third-party data base design tools. A performance monitoring tool, developed by a non-IBM company, is scheduled to be available in the third quarter of this year and will be more powerful than IBM's current offerings.

Goetz also stated that "there is no way to determine through SQL where the data physically resides." This is because DB2 uses VSAM data sets to physically store the data. These sets are catalogued and follow strict naming conventions to identify the table space they belong to.

I agree that IBM has made third-party developers' jobs more difficult, but I believe IBM has also given them sufficient information to provide competitive products. I feel comfortable supporting non-IBM hardware that utilizes DB2's standard interfaces because they will utilize the capabilities of DB2 as that product is enhanced without jeopardizing its integrity.

Tom Umberger
Consultant
Spectrum Technology
Group, Inc.
Tampa, Fla.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Lohrey, Editor, Computerworld, P.O. Box 9171, 375 Cochin Road, Framingham, Mass. 01701.

When a skeptic tastes a Macintosh — and likes it

— ASHLEY GRAYSON

The culture shock of adopting the Macintosh after 20 years with command-line interfaces can be overcome even by a skeptic like me.

Part of the reason is the increasing availability of applications. However, Macintoshes were not brought into my shop in a search for more applications—we can't use even a fraction of those available for the IBM PC.

We tried the Apple machine because of Mac enthusiast's evangelism finally got to us. We adopted it because of the growing efforts of PC software developers to adopt Mac conventions. The Mac offers a seamless user environment that brings two benefits: a uniform interface, which allows skills learned in one area to be immediately applied elsewhere; and the ability to communicate text, graphics and spreadsheet data in a single compound document.

Neither of these qualities has been a PC hallmark. However, as PC developers attempt to build these capabilities on top of a recalcitrant DOS, they demonstrate the superiority of the

Macintosh approach—a single environment that can be shared by all programs.

The improved DOS-based products provide value to us PC users, but the seams show. If the most popular software packages redefine the PC environment, why not adopt the source of their inspiration?

A tool for the job

And there are some applications that are best solved with the innovative Macintosh tools. Our organization has a unique requirement for a small text database that is unified with a tickler file—or "to do" list—a phone directory and a spreadsheet.

After two years of searching for a tool to implement the data base on a PC, we decided that Borland International's Paradox running on an IBM PC AT-class machine was the best answer. But this package was too big to pop up, wouldn't link to a spreadsheet and would take too much programing effort.

Using Apple's Hypercard on a Mac, I was able to implement our application in just three days. And it was fun. Fun is too important to overlook as a factor. A current Apple television ad positions the Macintosh as a system that beats the training bottleneck because "the users train

Continued on page 20



BRIAN DANC

Grayson is the founder of ADG, a San Pedro, Calif.-based organization that develops sales tools and programs for high-technology companies.

What's not in a name

ELISABETH HORWITT



Vendors that tend to be a trifle austere and pragmatic, not to say unoriginal, in their choice of product names have come up with some weird project code names for systems and software packages still on the drawing board.

Perhaps it's just that although a formal offering must fit into a vendor's long-term marketing theme or numbering scheme, a development project is out of the public eye, unofficially the prop-

erty of techies with their own senses of humor.

Take IBM, whose idea of a catchy microcomputer head name is something that starts with the word "personal." The vendor got positively silly when its Personal Computer AT, PCjr and PC Convertible were in the development stage, dubbing them Popcorn, Peanut and Canned, respectively.

At other times, IBM project directors have revealed a penchant for the aesthetic. A mysterious communications processor rumored to be in the works at IBM is code-named Monet. And, of course, there's Silverlake, which evokes visions of some romantic vacation spot rather than a convergence of IBM's mid-range computer line.

Named after Dad

IBM PC software companies tend to reflect the whims of their founders when code-naming important projects. Lotus founder Mitch Kapor's appreciation of music — he used to be a disk jockey — is said to be behind

product names like Symphony and Jazz. Lotus's 1-2-3 was code-named Trio during its development stages. (We understand that Kapor named his firm Lotus because of his involvement with transcendental meditation).

Microsoft's Word was code-named Cahnere because founder Bill Gates is a sweeter enthusiast.

Finally, there are names clearly meant to inspire developers. For example, Xerox dubbed one of its projects Worm in hopes that it would produce a computer that could eat into Apple's market share.

But one questions some choices, such as the wisdom of Data General choosing the code name Asparagus for a switch it is co-developing with Nippon Telegraph and Telephone. A DG spokesman explains that the name was chosen because "asparagus requires a lot of nutrients and fertilizer and takes two or three years before it is edible." Not necessarily a good omen for a key component of DG's networking strategy.

Horwitt is a Computerworld senior editor, networking.

APRIL 11, 1988

Tales of laundry, gunnery and AI

History repeats itself; don't look for AI overnight

JOHN BARNES



It can be a mistake to extrapolate too much from the past, but now and then I run across a pattern

in the history of technology that fits some present-day problems.

One that might bear on the continuing quest for artificial intelligence — not so much about how AI is likely to be achieved but in what sort of environment — begins with the humble washing machine. Once upon a time, the basic technique was to take clothes down to the river, smear soap on them, beat them against a flat rock, rinse them and squeeze the water out with your hands. A "clothes washer" was the person who performed this operation.

Then people learned to make a better shaped flat rock — the washboard — and to keep the soapy water in a single container — the washtub — thus saving some effort.

In the next stage, you pumped a foot treadle to rotate a washtub around an agitator, drained the soapy water, refilled the tub with rinse water, did it again, drained the rinse water and ran the clothing through a wringer.

Although the same things were getting done to the clothes and a human being still had to be there to make the machine do the job, the machine was doing the bulk of the work. Machine-assisted washing had arrived.

More stages followed. The drum and wringer were powered; then a spin drum replaced the wringer; then the machine did everything in one drum. The machine "learned" to add the right amounts of water at the right temperatures at the right times and then to shut itself off when it was done. It became the automated washer, a step at a time.

A British "computer"

In another case, some of the immediate ancestors of the computer were machines used by the British government to work out, entry by entry, the values for naval gunnery tables.

These figures were then

printed in a book. When it was time to use them, a man took the bearings from spotters, looked up the corresponding values, processed them with a slide rule, pencil and pad into a bearing and elevation and finally ordered the gunners to lay the gun accordingly. That man was called the "computer."

Later, the calculating machines became so cheap that ships could carry their own and take the values directly without looking through the book. Then the machines learned to do the job of the slide rule/pencil/man system from data entered by the spotters. And then to do their own spotting. And then to aim the guns...

Building smarter people

Maybe the question we should be asking is not, "How can a machine get smarter?" but, "How can a machine help a person be smarter?" Eventually, the machine will end up being smart for the person.

In some ways, it already is. The oldest word processor I know of uses the next period, question mark or exclamation point as the terminator of a sentence. If there isn't one, it goes right to the end of the file. More recent word processors stop at a paragraph end, are not fooled by Mr., Mrs. or Dr. or treat a semicolon as a single period.

The current model knows that, "Oh! Dr. Mangrove! You startled me... what are you doing?" is probably all one sentence and will check with the user to make sure. The word processor is evolving toward doing what a program needs to do to understand English prose.

Similarly, a doctor using a text processor to research cases toward a diagnosis is on the road to a true diagnostic system. Based on historical precedent, one can imagine the machine taking over parts of the job of deciding what's relevant, then perhaps of deciding what's similar, until one day the system can discover previously unknown syndromes and write research protocols to identify them.

We can draw the following few ideas from the history of other technologies:

• Shoot for a small increment every time rather than a great leap forward. Make every program just a little smarter than it has to be. A program that multiplies collects notices might first write a short report on several collections from each ZIP code or phone exchange. Later, it might

Continued on page 20

Macintosh

CONTINUED FROM PAGE 19

themselves." Apple may be uncomfortable saying an "serious business people," but it is the fun factor that drives self-training. It's a fundamental element of the Macintosh experience that you can't plan for but can depend on.

Much PC training is rote procedure. Employees really learn how to do things by working with people already doing them. Mouse skills for the Mac are better developed by a good game than by a training module. This learning experience bypasses the need to put concepts into words, the critical hang-up in documentation. Thus the Mac hasn't so much solved

the documentation problem as dodged it.

Proficiency at Lotus's 1-2-3 will not make you a more efficient user of Microsoft's Word on the PC because the metaphors are so different. On the Mac, however, every software package you use will enhance your skills with the machine because everything builds on the common base. Add-in word processors for 1-2-3 are trying to simulate a common metaphor, but they're starting too far down the chain.

Phones and networks

In the Mac community, the quintessential machine is the Macintosh Plus. Available at tempting discounts compared with the new flagship Macintosh SE and able to run virtually every package yet developed

for the Mac family, it's a good first buy. But consider Mac Plus an opportunity rather than an investment. The Mac SE delivers the Macintosh look and feel in a tighter package and includes a 20M-byte hard disk drive.

The Macintosh II, however, delivers a different psychological impact. Essentially a Motorola 68020-based workstation, it is the first packaging of the Mac that resembles a PC AT; like the Intel 80286-based computer, a truly high-performance system must be custom-built from third-party components.

For example, my favorite 286-based system is a Hewlett-Packard Vectra with a Video Seven, Inc. Deluxe extended Enhanced Graphics Adapter controller and a NEC MultiSync Monitor. To replicate this

approach in the Macintosh environment, we acquired a stripped-down II. This \$3,000 package included 1M bytes of memory, one 800K-byte floppy disk drive and no video controller or monitor.

Surprisingly, it took a month to get add-in memory chips at reasonable prices. Third-party sources complained that Apple had dropped its own list price below the competitive vendor's cost but hadn't actually shipped any product. I finally had to sweat out installing an additional 4M bytes of Mac memory cards. An anomaly in the Mac world, the process is nonintuitive, mechanically challenging and best left to an experienced dealer.

Even including the memory woes, our high-performance package flew together, the entire system booting up in less than an hour. To the basic Mac II we added three components from Supramac Technology: an XP150L, which is a 150M-byte internal hard disk, an HP Spectrum video card and a Trinitron-based 19-inch color monitor.

Since our existing Mac Plus configuration included an external Apple hard disk drive, we simply screwed the small computer systems interface connector to the back of the Mac II and copied 15M bytes of applications directly to the Supramac hard disk. With a "shareware" program to colorize the standard Mac programs, we had the ultimate California Macintosh — aqua-tinted screen with salmon-color menus showing beige highlights — in less than an hour.

This is the real Mac II experience; it's like producing a motion picture. More than \$12,000 worth of hardware and the talents of a creative director have brought alive amazing images on the screen.

But I wonder, is it a personal workstation or a departmental resource? And will we draw a large enough audience of users to the wide screen to make back the investment?

Laundry

CONTINUED FROM PAGE 19

be allowed to find out where collection notices make the most difference.

• Ask the people who read the output what they wish were included. Who would know better? Then, see if there's a way for them to tell the program, instead of you, what they want.

• Ask the editor's readers what they do after they read it. Maybe part of the process can be integrated into the program.

• Upgrade existing programs by giving them better front-end filters and wider access to data. Historically, automation comes in steps — first the machine that does the work under guidance, then the self-guided machine and, finally, the machine that decides what needs to be done. The more a program knows about what it is supposed to do, the fewer restrictions there need be on what data it can access — and the closer you are to AI.

• Keep risks low. Every program should automate as much as it safely can — no more. Shoot for machine-assisted natural intelligence in data base searching, but not in updates. A weird search costs little, but a weird update can be disastrous.

The key point is that it doesn't all come at once. If history tells us anything, true AI won't be born in one blinding moment. More likely, it will evolve slowly into existence from what can be called machine-assisted natural intelligence.

How to process your expenses.

Processing your travel and entertainment expenses in the past has been difficult and has required extensive resources. More than \$100 billion is spent on T&E each year, yet most companies have failed to receive adequate data for analysis and reporting. Until CAPTURE™, that is.

CAPTURE is the first financial information system designed to leave nothing to chance in

T&E expense management. From automated data retrieval to complete reporting, CAPTURE lets you manage the entire business travel process automatically.

What's more, with CAPTURE's SQL-based technology and easy-to-use screens, you can maximize the productivity of your users. And CAPTURE is compatible with your other financial information systems while providing a platform for future growth. With its

wide variety of features and complete client support, CAPTURE turns your travel data into a corporate asset to support decision making.

To find out more about CAPTURE, just call us toll-free at (800) 666-6601. We'll explain what makes CAPTURE a better way to process your expenses. And how it can help take the trial and error out of T&E expense management.

Take the trial and error out of T&E management.

CAPTURE
THE FINANCIAL INFORMATION SYSTEM

CAPTURE is a registered trademark of American Software, Inc.

An important message about customer-controlled software.

Because this is the most important operating system of all.



It goes without saying that a software package has to support the latest operating systems, processing environments, databases and the like.

Less obvious to the average business software company, however, is the need for their applications to work with you. And all the people who sit at terminals in your company.

The ones expected to meet tight reporting deadlines despite having to learn a new system. The DP staff turned miracle-workers. The managers who have to answer for lost productivity.

At McCormack & Dodge, our commitment to the latest technology never outweighs our obligation to you.

Five years ago, when you needed to integrate business applications, we responded with Millennium. Today that technology has evolved into customer-controlled software. The answer to your call for even more flexibility.

Customer-controlled software gives you the flexibility to make the system whatever your business needs it to be. Take our General Ledger package. A manufacturer might turn it into a product line reporting system, while a retailer sets it up as a weekly stock ledger, and an insurance user makes it a statutory ledger system.

It's all accomplished without disrupting your staff, your DP department, or your business. And it all comes from a software company consistently rated by Fortune 500 executives as a top vendor in overall service and support.

The message is simple. Customer-controlled software makes everybody's job easier. To find out more, or to inquire about any of our Financial, Human Resource, Manufacturing and Application Development software, call McCormack & Dodge at 1-800-343-0325.

We put the customer in control of the software.

McCormack & Dodge

A company of
The Data's Breakout Corporation

We put the customer in control of the software.

We've just cut five years off your relational DBMS conversion time.

To get the advanced capabilities of a relational database, you used to have to go through a lengthy, complicated, costly conversion.

Not anymore. Introducing the INGRES RMS Gateway—the first in a line of database links that let you apply relational DBMS power to older file management systems right now. Today. Without changing a thing.

The RMS Gateway makes RMS data appear as relational tables within an INGRES database. It lets you apply all the INGRES advantages—like easy user interfaces, industry-standard SQL, and powerful 4GL tools—while protecting your investment in data and applications.

Now you can generate all your decision-critical reports quickly, efficiently, and without disturbing other applications.

And you can keep on using all your RMS-based programs while you develop and implement new INGRES systems using the same data.

Best of all, the power of INGRES allows you to access RMS data across different hardware, networks, and operating systems—transparently—from anywhere in your organization. You can even combine INGRES and RMS data in any application.

What's more, an INGRES dBASE III Gateway is now available for data trapped in old PC files. And gateways to IBM's IMS, DB2 and SQL/DS are on the way.

No other relational database offers you these instant links to older data files—making INGRES the one relational DBMS you can put to work immediately.

Which could help put you years ahead of the competition.

Get the INGRES advantage—call 1-800-4-INGRES for more information.

INGRES

RELATIONAL TECHNOLOGY

2000 Marston Village Parkway, Alameda, CA 94601

AD808521CW

SOFTWARE & SERVICES

SOFT TALK

Charles Babcock

IBM's magic carpet ride

IBM's recent moves indicate it is attempting to escape its history as a silicon-and-steel metal hardware manufacturer and instead wants to transport its customers to a new level of computing proficiency, allowing computer use to spread beyond current limits.

At this higher level, systems will work the way they logically should, rather than depend on specific machine and procedural requirements. Users will float above the fray, not caring about their underlying processor or data base management system.

They will be transported through this ethereal world as if on a magic carpet, with all bumps smoothed and all obstacles crossed as they enjoy an uninterrupted view of the business at hand.

IBM's Systems Application Architecture (SAA) is a giant step in the direction of such a pseudo-machine environment. With its SAA approach, IBM could introduce underlying technologies without changing the way programmers develop applications or the way end users view their computing resources.

In its more recent announcements...

Continued on page 25

Rebutting System/36, 38 fears

Users group president Sutherland takes calmer look at SAA issues

Since introducing Systems Application Architecture (SAA) a year ago, IBM has had little to say about how its mid-range System/36 and 38 follow-on, code-named Silverlake, will fit into its plan to provide application portability across its major environments.

As a result, members of Common, IBM's mid-range users group, have not been shy in expressing concerns about the lack of attention to the System/36 and 38 line in SAA. In a recent interview with *Computerworld* senior writer Rosemary Hamilton, Robert Sutherland, the president of Common, addressed those fears and took a calmer ap-



Robert Sutherland

proach to the SAA issue.

What are Common's concerns about SAA?

It at first appeared that the System/38 community is — not completely excluded — but there were concerns that SAA is a 370 thing. I don't feel that's true. The concept is a great idea. I believe [IBM's] intent is not to exclude us, but this has been a real hot button.

IBM has sold Silverlake will come under the SAA umbrella. What is IBM's position regarding the current System/36 and 38 line and SAA?

They have been offering classes for writing [System/36 and 38] software for the future. They

Continued on page 27

Pro/Fit eases time burdens

BY NELL MARGOLIS
CW STAFF

FALLS CHURCH, Va. — The latest offerings from Wang Laboratories, Inc.'s captive software house, Information Management Consultants, Inc., target professionals for whom time is money as well as nonprofit associations.

With Pro/Fit, a four-module software package that tracks billing and expenses and analyzes how those factors fit into the overall company profit picture, Information Management aims to ease the time-sucking burden of architects, public relations personnel, business consultants and others involved in time-bound services.

In addition to Accounts Receivable, Accounts Payable and General Ledger, Pro/Fit provides a Time and Billing module with which detailed information is automatically tracked for professionals working on billable or

Continued on page 26

Data View

Applications planned by Unix VARs
Manufacturing and several key markets targeted by 903 value-added resellers surveyed



INFORMATION PROVIDED BY INTERNATIONAL DATA CORP.
OF GENEVE

Accountant takes CASE

BY ALAN ALPER
CW STAFF

NEW YORK — Claiming the ability to automate the entire application development life cycle, Arthur Andersen & Co. last week formally unveiled what it characterized as a fully integrated computer-aided software engineering (CASE) package.

The Chicago-based consulting services and accounting firm tied its existing application design and development system to a new data dictionary and code

Continued on page 25

Emc² OFFICE AUTOMATION Power through Simplicity™

Be recognized for bringing about new office productivity at your company. Select the prominent Electronic Mail and Document Connectivity Tool for IBM machines — Emc².

Emc² is so easy to learn, even your computer novice can use it right away. It is so intuitive, it easily supports tens of thousands of users in the data base, with any hardware connectivity

no-fee. And it runs under any standard MVS, VM, or VSE teleprocessing environment you care to use, either now or in the future.

You get universal connectivity with Emc². In IBM, VAP and FIVE. It provides interfaces to DISOL, PROPS, and Western Union services (Telex, Mailgram, etc.). And it provides constant PC

file transfer (including PC binary files) for over a dozen PC brands and adapters.

Emc² is full featured and fully supported. (Emc² has over 100,000 users and has been used by over 100,000 users.) Emc² is supported and maintained by Emc². Users who compare Emc² with other electronic mail and document transmission systems select Emc².

Call 800-237-4510 for a free trial or more information. (In Florida, call 313-643-188.)

Then get ready to share the benefits of being

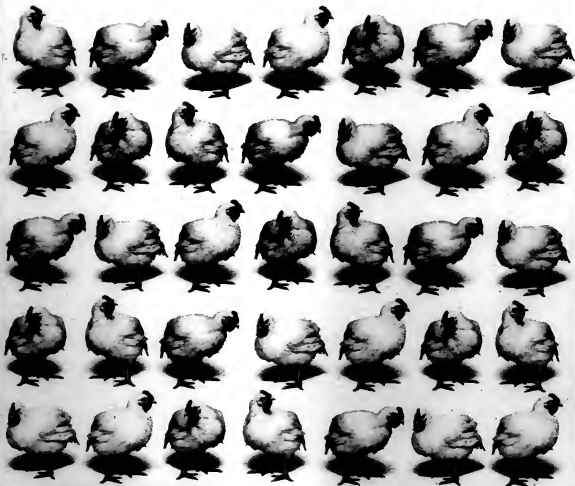
known as your company's genius.



FISCHER
INTERNATIONAL
SOFTWARE CORPORATION

6073 Marshfield Avenue, Naples, Florida 34103

* Emc² supports its own master-slave, multi-user environment to easily enlarge the population that can use it. VAP is a general VSE application for MVS and VSE. FIVE is a multi-user Fischer International Virtual System for VSE.
Copyright © 1987 by Fischer International Systems Corporation. All rights reserved.



CINCOM Boosts Production At Holly Farms.

PROBLEM: Improving programmer productivity in order to reduce a large applications backlog
CINCOM SOLVED IT: With MANTIS Application Development System



Mr. Bill Glontz
Director of Computer Services
Holly Farms Foods

During a period of explosive growth, Holly Farms found itself with two problems: a large applications backlog and a short supply of programmers able to step in and produce immediate results. The solution was MANTIS, the application development system from Cincom.

"MANTIS was ideal for us because you don't need 2-3 years of experience to use it," explained Bill Glontz, Director of Computer Services at Holly Farms. "It lets us take new graduates, quickly train them and, in a matter of weeks, turn them into valuable programmers."

As a result, programmer productivity at Holly Farms has reached an all-time high. "We've seen substantial improvement ratios," Glontz said. "In the time a programmer might turn out one CICS command-level program, he can turn out from six to eight programs on MANTIS."

Most of the 500-plus MANTIS applications now in production at Holly Farms are aimed at streamlining costs. For example, Data Processing used MANTIS to develop a model of how chickens consume feed over the course of their lives, allowing Holly Farms to cut production at one of its feed mills by 1½ days a week.

"We've got key users who are picking up on the term 'MANTIS,'" Glontz noted. "Around here, MANTIS has become a synonym for 'get it done quickly.'"

Find out how MANTIS can boost your productivity. Call us today for more product and customer success information. Or, write Marketing Services Department, Cincom World Headquarters, 2300 Montana Avenue, Cincinnati, OH 45211.

1-800-543-3010

In Ohio, 513-661-6000

In Canada, 1-800-387-5914

 **CINCOM**
The Better The Solution, The Better The Value.

Babcock

FROM PAGE 23

ment of AIX, a Posix-compliant type of Unix, for the mainframe, IBM indicated it will offer a second software architecture that will complement SAA. With high-connectivity features, AIX will link to other Unix-oriented systems and tie them to the host. In effect, IBM is offering a bridge between the quasi-public world of Unix and its proprietary mainframe environments.

Although application portability is the most commonly stated goal of SAA, it offers the possibility of freeing both IBM and its customers from being circumscribed by incompatible hardware platforms. The conversion nightmares undergone by some customers trying to leap the wall between a mid-range IBM System/36 or 38 into the 370 family would be eliminated.

IBM at the controls

Let's become mesmerized, it should be noted that IBM will exercise a great deal of control over this world and will sell a great deal of software in it. While SAA embraces public standards where they exist, it necessarily includes a great many features that only IBM can provide—and can change at will. SAA leverages IBM's programming resources, now heavily committed to the firm's existing product lines rather than innovation, and multiplies them by letting them develop far more than one hardware arena.

SAA also eliminates the need within IBM to constantly reinvent the wheel. The user interface will be set across all systems. One drawback to this, however, is that someone else will do the work if the interface is to be advanced.

In a world dominated by SAA, IBM will control the mainframe DBMS and have it closely tied to the operating system. The announcement of ESA/370, a new MVS dressed up with data spaces, was a step in that direction. Having undisputed control of the host and already owner of the network architecture, IBM also wants to be the possessor of the means of distributing corporate data.

Once IBM has convinced customers that all will benefit from this new software uniformity, it can begin addressing a larger base of end users. Instead of being isolated experimenters, this growing pool would be tied closely to a host through distributed data base systems and cooperative processing applications. And that software would become the engine that finally drives the demand for mainframes forward.

Babcock is Computerworld's senior editor, software & services.

Pro/Fit

FROM PAGE 23

nonbillable client accounts. Editing, review and reporting features are included so that final bills and in-house records can be generated by the software.

Written in Speed II, a fourth-generation language from Seattle-based Tom Software, Pro/Fit

can reportedly be customized to fit the individual company's client billing, accounting and reporting structures, Information Management President Sathishkar Shenoy said.

Worked time

Just as professionals spend too much time tracking time, so do professional societies, trade associations and other nonprofit

organizations that get bogged down in the attempt to track and manage membership and meetings, Shenoy said.

Information Management provides automated aid in the form of a second four-module software suite called Executive Director.

Membership Management System, Meetings Management, Exhibit Administration and

Membership Accounting make up the Executive Director system, which is also written in Speed II.

Pro/Fit and Executive Director, both of which run on Wang VS computers, are available immediately at prices ranging from \$8,000 to approximately \$50,000, depending on the modules purchased and the amount of support.

SQL Performance for OLTP. Tandem challenges anyone.

Rebutting

FROM PAGE 23

wouldn't be offering those courses for nothing. So in my opinion, SAA will be available on the System/36 and 38.

From your work as a consultant and your position as the president of Com-

mon, what have you picked up as your concerns regarding SAA?

My clients are small businesses and are typically not concerned. In the overall System/38 community, they have been concerned that SAA is too 370 oriented, and they've been worried that they would have to learn the 370 environment and learn how to write for that world.

Has Common been offering users any guidance on SAA?

Common doesn't offer specific guidance, but we are encouraging users to learn about SAA. We can't tell them what to do.

What about in your role as a consultant?

There are a lot of little users who are not concerned with SAA or

what the new [Silverlake] system will look like. What they care about is what a system costs. Many of them are happy and see no need to make plans for change.

For instance, I just helped a client upgrade from a System/34 to a 38. He had the System/34 for 10 years. The new System/38 is his investment for the future.

How do users feel about IBM's overall mid-range strategy, which incorporates the 9370 and the System/36 and 38 line?

I haven't seen the 9370 become a big issue. Other than SAA, I don't see much confusion.

Has IBM addressed Common on its SAA strategy?

There have been some SAA sessions, yes, with IBM speakers.

What has IBM told you?

I couldn't answer, since I wasn't at those sessions.

Do you know what IBM's position is regarding the existing System/36 and 38 line and SAA?

Not exactly. I know their intent is to put RPG III [under SAA].

I got the impression that you view the System/36 community as isolated from whatever else IBM is doing.

You could say that. There isn't a need for change in the 36 area. I don't see it.

Are you saying that System/38 users should be more concerned about SAA than System/36 users?

That's a fair statement.

Why?

Primarily because they are data base oriented. From what I hear, SAA is geared toward that environment. If you look at SAA, in my opinion, it would allow you transportability from PCs to a high-end 370.

And that is a function that doesn't have a purpose in a System/36 environment?

Not today.

What about in the future?

Who knows what that will bring. The gain is that it will give [System/36] users other options, in terms of hardware platforms, for the future.

But that wouldn't be the case if the current System/36 line isn't under the SAA umbrella.

I don't believe IBM will leave it out of the scheme of things. It's been the best-selling hardware for years. They won't exclude it.

IBM's intent may not be to exclude it, but what has the firm said that indicates it will include SAA?

They had a session at Common that explained how SAA would fit together. A System/36 test processor was used under SAA as an example of what would be incorporated under SAA.

Have you been briefed about Silverlake?

No comment.



PRODUCTIVITY PLUS PERFORMANCE.

NonStop SQL™ — the only SQL system that delivers OLTP performance. It's embedded right into the operating system. This is where the work is done, allowing the application to run at OLTP speed. You get a distributed RDBMS with the productivity, performance and data integrity that OLTP demands.

DATA INTEGRITY. DISTRIBUTED PROCESSING.

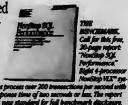
MODULAR GROWTH. Users can read, write and update data anywhere in the Tandem network with full data protection. The database will always reflect the current state of business. You can grow the system to any size, in any increment. Yet to the user, the entire database will look like a local database.

OLTP fundamentals.

If you don't have them all, you don't have OLTP.



NO ONE KNOWS OLTP LIKE US. Whenever there's a need for constantly current information, linear expandability and excellent price/performance, Tandem technology proves consistently superior. Compare us to any other OLTP system. You'll see why companies in every major industry choose Tandem. For more information, call 800-482-6336.



TANDEM COMPUTERS
OLTP is On-Line Tandem Processing.

CA115

Digital
has
it
now



Kaman Corporation is a *Fortune* 500 company and one of the nation's largest industrial distributors. Kaman Bearing & Supply, its subsidiary, is connecting its 165 branches throughout the U.S. and Canada with a computer network from Digital. According to Harvey S. Levenson, President, "Digital is providing a network for transaction processing that will give each of our branches instant real-time access to the company's entire nationwide inventory - in effect, one 'big back room' for all of us."

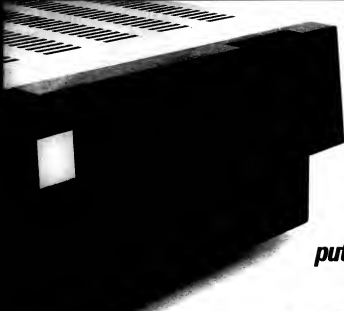
"Transaction processing is how we let Kaman manage an inventory of over 100,000 industrial parts with no paperwork."

Transaction processing was a major role in Kaman's choice. Levenson stated, "We wanted a system that could be run by as few people as possible to run the system. Digital's network data base transaction processing system to track the state of our inventory was the best of all the alternatives we've examined."

Levenson continues, "We've chosen Digital because, we'll run our business and serve our customers better."

To learn more about Digital, or to schedule a demo, now, write: Digital Equipment Corporation, 200 Essex Ave., West Concord, MA 01741, or your local Digital sales office.

digital



***Our 19.2 Kbps modem
puts more people on line.***

***Our modem insurance
makes sure they stay there.***

Now you can increase your throughput and cut your line costs by putting more people on a single modem line.

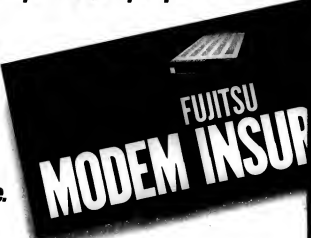
With Fujitsu's two-channel, stand-alone 19.2 Kbps modem, you can send twice the information of a 9600 bps modem without adding additional lines.

This increased capacity can save you up to \$1500 per month for each leased line used for coast-to-coast communications.

You'll also save time and worry because Fujitsu's Customer Service is ready to solve any problems—anywhere, anytime.

But the 19.2 modem is so well made that we not only guarantee it—we insure it.

With Fujitsu's Modem Insurance, you're doubly protected. If your modem fails during the first year, we'll give you another modem. For free. And we'll fix the first one. Also for free.*



**FUJITSU
MODEM INSURANCE**

So if you're looking for a guaranteed way to increase your throughput and save money, call Fujitsu for the name of a distributor near you. 800-422-4878. In California, 408-434-0460. In Canada, 416-673-8666.



**Fujitsu's
Customer
Service
locations
nationwide.**

*This limited offer for Fujitsu Modem Insurance is only open to new purchasers of 19.2 Kbps modems from an authorized Fujitsu America distributor and is subject to the terms of our Modem Insurance Policy.

FUJITSU

FUJITSU AMERICA
DATA COMMUNICATIONS
3055 Orchard Drive
San Jose, CA 95134

NEW PRODUCTS

Systems software

Ikos Systems, Inc. has released a version of its simulation system for Sun Microsystems, Inc.'s Sun-3 family of workstations.

The Sun-based Ikos Simulation System consists of the Ikos system software and an Ikos 800 or Ikos 1900 hardware accelerator module and an interface card. The system may be configured as a shared-network resource, allowing a single Sun workstation to act as a server for up to four Ikos accelerator modules.

The Ikos 800 accelerator module provides modeling of up to 64K-byte primitives and simulation speeds up to 20 million events per second; the Ikos 1900 has the capacity to model up to 246K-byte primitives and offers simulation speeds up to 75 million events per second.

The Ikos Simulation System for the Sun platform is priced from \$57,000.

Ikos Systems, 145 N. Wolfe Road, Sunnyvale, Calif. 94086, 408-245-1900.

Utilities

TBS Software, Inc. has announced Release 2 of Hupdate, its IBM Distributed Office Support System (Dioses) on-line HUP management system.

Hupdate is a CICS transaction that lets the Dioses system administrator view, add, update and delete user definitions while the Dioses region is active and users are logged on.

Enhancements include support for Dioses Version 3, Release 4; support for working relationships; support for IBM MVS/XA 31-bit addressing; logging of updates; post-update user exit; and such usability enhancements as expanded access code fields, more primary commands, improved documentation and new installation options.

A single-CPU perpetual license is \$5,000. A single-site multiple-CPU license costs \$6,000.

TBS Software, 28 Viamede Circle, North York, Ontario, Canada M2K 2A8, 416-221-5140.

An operations tool for users of IBM's CICS designed to enable the user to streamline operations and manage resources has been announced by Main Frame Software Products Corp.

Called Know/CICS, the menu-driven product offers information about terminals, transactions, files, storage areas, response times and system usage. It also automatically logs off terminals after a specified interval of time.

Other features include broadcast facilities, screen-capture facilities and diagnostics.

Know/CICS uses standard command-level CICS. License fees range from \$2,900 to \$3,900.

Main Frame Software Products, 1 Hollis St., Wellesley, Mass. 02181, 617-239-0288.

Services

A methodology for information resource management has been introduced by M. Bryce & Associates, Inc.

According to the vendor, Pride-EEM, which stands for Enterprise Engineering Methodology, is a universal approach for

enterprise modeling and the development of an enterprise information strategy.

Pride-EEM consists of five phases. Each phase contains a defined set of activities and tasks to model the enterprise, both logically and physically.

A license fee for the methodology is \$25,000.

M. Bryce & Associates, 777 Alderman Road, Palm Harbor, Fla. 32683, 813-786-4567.

Development tools

Information Resources, Inc. has announced a version of its Express Deci-

sion Support System, which features multidimensional data base capabilities.

Called Express MDB, it is written in the C language and is available for the IBM MVS/TSO environment. According to the vendor, Express MDB increases system efficiency by using more compact code than Express. It also streamlines system operation by simplifying the command structure. It reduces the number of system commands from 1,100 to 100.

Express MDB costs \$125,000.

Information Resources, 200 Fifth Ave., Waltham, Mass. 02154, 617-890-1100.

Tommy, Inc. has ported its Data Base-Plus and Mach 1 application development systems to minicomputer and mi-

crocomputer environments.

The products are now available for Santa Cruz Operation, Inc.'s SCO 386 Xenix, AT&T's 382 computers running Unix System V and IBM's System/36 Model 5363. According to the vendor, any previously developed Tommy-based application programs are 100% portable to the new environments.

Data Base-Plus includes a data base manager, a screen handler, a print handler, utilities, an SQL-based query/report writer and programming language interfaces.

Development licenses range from \$1,500 to \$16,500; runtime licenses range from \$750 to \$4,000.

Tommy, 4221 Mahogany Road, Cincinnati, Ohio 45242, 513-964-6605.



REALIA COBOL DRIVES THE HIGH-SPEED DESKTOP

Our competitors will tell you that performance is secondary—it's not. Or they'll want you to buy faster hardware—don't.

Thousands of programmers know how much difference Realia COBOL makes every day, in their own productivity and their users' satisfaction. Realia COBOL is not only the fastest-compiling COBOL for the PC or PS/2 (2 to 10 times faster than the other PC COBOLs). It also produces the tightest, fastest executable programs (4 to 70 times faster than the others).

Call for your copy of the Realia COBOL 3.00 Benchmark Report. Or ask for a free evaluation copy of the product—we'll also send you the benchmark program, so you can compare the compilers for yourself.

REALIA

10 South Riverdale Plaza, Chicago, IL 60606 • (312) 346-0642 • Telex 332779

**"The
Data General
difference:
responsiveness
across the
board."**

And Bill Gower, Senior Vice President
of NCNB National Bank of North Carolina

**In less than 30 days from date of order,
Data General computers
were processing 10,000 loans for
NCNB National Bank of North Carolina.**

With nearly 600 branch offices, NCNB National Bank of North Carolina is one of the largest banks in the southeast, and among the top 20 in the country.

Recently, NCNB felt an urgent need to upgrade its loan processing system to better serve its customers.

NCNB chose Data General to help set up the system. And Data General responded.

Within one month of order, Data General had an MV/ family system for over 60 people up and running. (Others had estimated 6 months to do the same job.)

The NCNB system was so user-friendly, it required only a minimum of training for the bank's personnel to operate it proficiently.

In no time, they were servicing loans, processing payments and receivables in a way that exceeded all expectations.

Says Rod Bosscawen, Senior Vice President at NCNB:

"Data General's ability to respond quickly and provide support on a broad-based front helped NCNB establish a loan-processing operation in record time. Without their commitment and performance, the accomplishment of this would have never been possible. We are extremely impressed."

To learn more about Data General's responsiveness across the board, send us the coupon below. We'll send you the latest issue of PROFILES, our publication devoted to customer success. Or call: 1-800-DATAGEN. In Canada, call 416-823-7830.

 **Data General**

3400 Computer Drive, Dept. ADG/NCNB, Westboro, MA 01580
Please send me the current issue of PROFILES

Name

Company Phone

Address

City State Zip

CALL 1-800-DATAGEN

MICROCOMPUTING

MICROBITS

Douglas Barney

C is for criticize

Assembler is better, you C. The ever-offensive Philippe Kahn of Borland International recently had some choice words about the delay of Lotus's 1-2-3 Release 3. According to the Kahn-man, the delay came as little surprise. "They said Release 3 had been delayed because they needed additional time to shrink and optimize their code. But it is not easy to shrink C code. The best way to make a spreadsheet fast and small is to do what we did with Quattro, and what they had done with the first release of 1-2-3—write it in assembly," Kahn said in an interview.

Kahn reassured his theory in an MCI Mail letter sent to some 70 journalists and industry observers. Kahn raked Lotus over the coals for unkept promises that he said "hurt users and the industry" and then launched into the "assembler is better than C for spreadsheets" diatribe.

Who's right? Both. It is reasonable to assume that an assembler-based spreadsheet can be faster and smaller, but it is also true that Lotus will provide Microsoft's OS/2 and MS-DOS

Continued on page 39

Publishing systems hit the desk

IBM PS/2, RT PC-based units readied for shipment in hot market

BY ED SCANNELL
CW STAFF

NEW YORK — IBM last week unveiled two systems aimed at boosting its flagging share of the fast-growing desktop publishing market.

The first added turnkey desktop publishing systems based on its Personal System/2 Model 60 and RT Personal Computer along with a marketing and interlinked agreement with Interleaf, Inc.

The first product IBM will ship under the agreement is the IBM Interleaf Publisher, a high-end publishing package intended for users in both the corporate and technical markets. The program will be available by the end of May, a spokesman said.

IBM also plans to market a core version of the Interleaf program for its RT PC. The program is an upgraded version of Interleaf's TPS Release 4 and was designed for groups of writers whose systems are networked. It is set to ship in October.

Post and lipo avoided

The agreement calls for Interleaf to develop a number of publishing packages for a range of IBM systems. Both companies refused to comment on future products. The agreement gives IBM worldwide marketing rights to all Interleaf's DOS-compatible products.

Interleaf's version for the PS/2 Model 80 will compete directly against that company's

version for Apple Computer, Inc.'s Macintosh. The agreement with Interleaf is seen by some observers as a serious attempt by IBM to break into the desktop publishing market, in which Apple has established a commanding lead.

The two IBM-Interleaf offerings have text, graphics and image capabilities and were designed to work primarily with long and complex documents. Both programs are capable of producing programs compatible with Adobe Systems, Inc.'s Postscript language.

IBM and Interleaf officials said they believe a major advantage of their products over desktop publishing packages is that users can lay out documents ha-

Continued on page 38

Everex aims 386 system at Deskpro

Everex Systems, Inc. has introduced a 20-MHz Intel Corp. 80386-based system capable of processing 5 million instructions per second that will be positioned directly against Compaq Computer Corp.'s Deskpro 386 Model 20.

Christened the Step 386/20, the company claimed the machine is the fastest 386-based system now on the market and is priced about 30% below the Deskpro 386 Model 20.

The Step 386/20 achieves its processing speeds through the company's proprietary Advanced Memory Management Architecture. This memory scheme allows microcomputers to use write-back caching for the first time, a spokesman said. This technology is commonly used in mainframes.

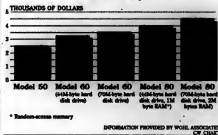
The cache size is scalable, allowing it to increase according to the amount of main memory being used, a spokesman said. Although Everex has been selling systems for several years, the

Continued on page 36

Data View

On the street

Least retail prices for IBM Personal System/2 Micro Channel models in February



Epson has its ups, downs

BY ALAN J. RYAN
CW STAFF

TORRANCE, Calif. — The fluctuating value of the Japanese yen and the dollar was one reason Epson America, Inc. cited as it lifted prices on its microcomputer printers and dropped prices on some of its personal computers.

The company increased the prices of the printers between \$30 and \$100. New pricing for

Continued on page 38

Inside

- Phoenix's Levander closes around, Page 35.
- Lotus drives Microsoft to data access, Page 35.
- VM Personal Computing's Baby Gold goes for the network, Page 40.

Excelerator Micro Focus COBOL 2 Workbench

... from design to tested code

Analyze, design, develop, compile and test mainframe or microcomputer COBOL applications in an integrated workstation environment with our Excelerator interface.

The interface converts system design from Index Technology's Excelerator systems analysis and design software into structured skeleton COBOL source code that can be refined using the Micro Focus® COBOL 2 Workbench® programming environment. Previously, integrated support for all stages of COBOL application development required the use of mainframe systems.

Outstanding benefits and features:

- Conversion of structure charts into skeleton COBOL programs which can be used within COBOL 2 Workbench
- Translation of Excelerator data records, elements, screens and reports into COBOL data descriptions, screen maps and report layouts by Micro Focus screen and report formatters
- Creation of usable PC and mainframe COBOL code, plus BMS and MFS assembler macros
- Increased productivity by automating the tedious work of coding screens, report and record layouts

- Reduced mainframe utilization by using PC workstations across the system development life cycle
- Reduced coding errors by enhancing communication between users, analysts and programmers
- Can be invoked from the Micro Focus COBOL 2 Workbench or DOS command line

Compile and Run Phase CICS and IMS Programs:
After you create programs, test them with the CICS or IMS Option for COBOL 2 Workbench and put a mainframe on your desktop! Take advantage of the

extended memory option on your PC/AT or PS/2 to test programs with Data and Procedure Divisions of up to 16 MB with 32K. COBOL 2 Workbench is a unique system of software tools for maintaining, creating, testing and running advanced COBOL programs on PCs. The Excelerator interface option greatly enhances its usability for mainframe programmers.

For the most efficient development of either your PC or mainframe programs, call us now.

1-800-872-6265

U.S.: 2465 E. Bayshore Road
CA 94303
(415) 854-4161
U.K.: 26 West Street
Newbury, Berkshire RG13 1JT
(0635) 32646

MICRO FOCUS®
A Better Way of Programming™

Excelerator is a registered trademark of Index Technology Corporation.

What price, performance?

Why not get the best of both worlds? The most advanced commercial computer technology to one of today's best known computer architectures.

We don't think so either.

ANNOUNCING THE UNISYS 2200-400.

It's the midframe computer that's setting a new price-performance standard for its class.

We created it by applying the most advanced commercially proven technology to one of today's best known computer architectures.

We improved it by adding the ability to work with computers from other companies.

And we refined it by making the whole system modular for easy, cost-efficient growth.

That makes it the ideal solution for anyone needing a departmental

system or a central office computer. It's the only system that works with both IBM and Unisys computers. And it's the only midframe computer that can be expanded to 100,000 words of memory, only from 10,000 words. And it's the only computer that can be expanded to 100,000 words of memory, only from 10,000 words.

And it's the only computer that can be expanded to 100,000 words of memory, only from 10,000 words.

A true product of the merger that created Unisys, the 2200-400 redefines midframe price-performance standards to give businesses the processing power they need.

Better information leads to better decisions. And investing in a computer that can help you to be more competitive, at the right price, over the long haul is a smart decision. BETTER INFORMATION. BETTER DECISIONS.

UNISYS

The power of ²

SMALL
TALK

Rich Finkelstein

IBM plants PC
DBMS roots


Data base announcements have been splashed across a lot of front pages lately, with much of the

dowpour generated by personal computer data base management system vendors' scrambling for a position in the emerging SQL market.

But the entrance of a new and highly conspicuous player has also turned a few heads. IBM's announcement of the OS/2 Extended Edition data base manager, the Data Manager, sent a message out loud and clear — IBM means business and wants a piece of the PC DBMS action. And unlike many of its recent competitors, the IBM OS/2 product will ship this summer — not late this year or sometime next year.

The Data Manager is not only an essential ingredient of IBM's Personal System/2 hardware strategy but is also the foundation of its future data processing and data base architecture.

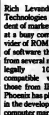
Division of labor

Building on the ground up for the PS/2, the Data Manager may usher in a new age of cooperative processing. Instead of monolithic, overworked and overloaded mainframes, corporations will be able to divide the work among layers of data base servers, using the OS/2 Data Manager at the front end and IBM System/34, 36 and 38, 9370s or 3090s at the back end. Key to this strategy is the Data Manager's support for two major components of IBM's Systems Application Architecture (SAA), Advanced Program-to-Program Communications (APPC) and SQL.

Cooperative processing requires a rich communications protocol suitable for multiple platforms. Rather than use its own LAN Manager Netbios protocol, which only provides a PC network solution, IBM has chosen to build the Data Manager around OS/2 Extended Edition Communication Manager's APPC protocol. Applications systems using APPC support will be able to access remote data bases such as DB2 or SQL/DS seamlessly on a peer-to-peer basis.

Of equal importance is support for SQL, a common data interface.

Continued on page 39

Phoenix Technologies' Levandov
urges PC makers to send in the clones


Rich Levandov, 33, Phoenix Technologies Ltd.'s vice-president of marketing, is a busy man at a busy company. As the provider of ROM BIOS, a key piece of software that allows systems from several major players to be legally 100% compatible with those from IBM, Phoenix has played a central role in the development of the micro-computer market.

Levandov joined Phoenix in June 1984. Prior to that, he spent two years at Wang Laboratories, Inc. as a product manager for that company's Professional Computer series. Before joining Wang, Levandov worked as a director of marketing at CSSM, Inc., a Boston-based systems supplier, and at the former Burroughs Corp. as a software support engineer. He holds a B.S. degree from Harper College and a master's degree in computer science from MIT.

Levandov has been so busy these days, in fact, that he had to conduct this interview with Senior Editor Ed Scannell over his car phone on his way home from



cro Channel? Well, does the end user really care about the bus? I think the answer is, if end users don't care that much about a bus, then there is nothing wrong with it.

Rich Levandov advocates Micro Channel cloning

a usual 10-hour workday of meeting with vendors.

is IBM's Micro Channel worth cloning?

We think it is. Actually, there are two answers to that. The first is that on engineering merit, compared with the [IBM Personal Computer] XT and AT bus, I believe it is a better bus. It is cleaner, has more capabilities, and it is better defined.

The other thing people talk about is, "What is the perceived value to the end user [of the Mi-

cro Channel? Well, does the end user really care about the bus? I think the answer is, if end users don't care that much about a bus, then there is nothing wrong with it.

What is Phoenix's role in cloning the Micro Channel? Our role in that technology is obviously one of analysis and consultation and [establishing] close working relationships with silicon manufacturers as to the system-level design issues involved. Another role is in development of the A BIOS and the systems software set.

We needed to be very aware of the feature sets of the different silicon platforms we were going to be incorporating so we could "turn on" via the BIOS. It is the BIOS that essentially is the first piece of software in any personal computer to become active.

How far will IBM go in defending its patents? How much is intimidation to gain time, and how much is real?

For IBM to be at the de facto standard centering around their technology, they have to understand, internally, that industry adoption of this bus is in the interest of the industry and, therefore, that it is very good for IBM. This also relates to licensing.

I think there has been enough said to make people believe they are going to license the utility patents. In a market share orientation, everybody knows it is better to get a smaller piece of the bigger market than 100% of no market.

What kind of Micro Channel clones can we expect to see?

[Circuit manufacturers] will be able to legally emulate the function of the Micro Channel bus such that any option board that plugs into an IBM product will plug into a compatible product. And it will all be done under the proper methodology such that no one lays on patent or copyright infractions toward them. If that involves licensing from IBM, it will happen.

Continued on page 36

PCtools Deluxe top buy?

Disk utilities package scores in completeness

BY T. A. ELKINS
SPECIAL TO CF

In this article, I plan to examine the relative strengths and weaknesses of various disk utilities programs.

Central Point Software's recently introduced PCtools Deluxe, priced at \$80, may become the new best buy in disk utilities. It is clearly a good and very complete package. The PCtools Deluxe has a defragmentation program that is uniquely very reliable. It also has a good backup utility. Central Point has even tossed in three format protection procedures and two surface-scan programs that provide considerable routine maintenance.

In addition, the central program undeletes, moves, copies, edits, word processes in small ways, maps and generally maintains files and directories in just about all the ways they need to be altered. Not a bad lineup.

Peter Norton Computing's popular Norton's Utilities has most of the capabilities of PCtools but is missing the Move Directory ability. It also lacks the disk cache and backup programs. On the other hand, it has unique extras like disk file wipe utilities for obliterating

files that should not be kept around and an interesting time program called Time Mark.

There is one serious problem with the Norton package: Utilities get confused by ANSI key reassignments and could well have trashed a disk during a tricky test. But this point aside, Norton is the current standard, and Advanced Edition Version 4 of Utilities is very good software.

Another competitor in this field, Paul Mace Software, Inc.'s Mace Utilities, includes a mix of some convenience features, such as undelete, defragment, an excellent cache and some hefty disk maintenance features. Some have called the Mace-like informat and disk scan additions to both Norton's Utilities and PCtools Mace clones. But this is one of the pleasant cases in which users profit from a fight for market share between software houses.

Despite an array of features, the Mace Utilities should be viewed as a heavy-duty disk maintenance system first and everything else second. The Surface Fix feature of Mace's Remedy scans every part of a hard disk's data area looking for weak, marginal or bad spots.

Continued on page 36

Lotus link's
generality
surprising

BY MERVY ADRIAN
SPECIAL TO CF

With Lotus Development Corp.'s recently announced Blueprint, the software giant's path into expanded data access has become more clear.

Attempts by Lotus to make its applications the center of a networked universe came as no surprise. There was a surprise, however, in the breadth and generality of the Blueprint specification, which was positioned as a generic link layer to not only host data but also to any other data in Microsoft Corp. MS-DOS platforms — a "transparent back end," as Lotus called it.

In short, the Lotus application in use at the workstation connects to an interface called a data driver, which is provided by the vendors in most cases. Lotus, however, is supplying several drivers itself, including one for Ashton-Tate Corp.'s dBase.

Once connected, the application may query the driver, depending on the driver's sophistication, for a list of available data maintained in its format. It may

then begin retrieving or manipulating the data with the application's commands directly, such as with the Data External command in Release 3 of Lotus's 1-2-3, without any need to consider the architecture of the connected data or the syntax supported by the hosting product.

As is typical with announcements of this type, a list of vendors pledged support.

Although no official confirmation was forthcoming, sources indicated that Network Innovations Corp., now owned by Apple Computer, Inc., is working on a driver for the Ethernet environment. Thus, the platform may become as transparent as the pipe.

An interesting side note was that Syntex Systems Corp., a driver for the SQL Server, jointly developed by Microsoft, Ashton-Tate and Syntex, Inc., will be a key competitor for the forthcoming Lotus/DBMS in the departmental, client-server networked data base management system market.

"Their salesmen will be able to make the case that clients can have SQL Server and still use 1-2-3. We will have to prove to our customer that our [data base] offering is equally worthy," said Musie Shore, senior product manager for Lotus's connectivity products division.

It will be interesting to see

Continued on page 37

Everex

FROM PAGE 33

Step 386/20 is the first system to be sold under the vendor's own label.

Besides the 20-MHz 386 chip, the standard configuration of the machine consists of 1M bytes of main memory with zero-wait state operation, expandable to 16M bytes; Advanced Memory Management Architecture with 54K bytes of random-access memory cache, expandable to 256K bytes; a 1-to-1 interleave hard-disk/floppy-disk controller; a 101-key keyboard; and a floating-point coprocessor compatible with Intel's 80387 and Weitek, Inc.'s 1167.

Everex has introduced its first authorized reseller program to help get the Step 386/20 off to a fast start, a spokesman said. The system will be sold only through the company's authorized dealers.

The 20-MHz version of Step 386/20 is priced at \$4,399; the 16-MHz model carries a suggested retail price of \$3,699.

Micropro upgrades Wordstar

SAN RAFAEL, Calif. — Adding capabilities such as advanced page preview and newspaper-style columns, Micropro International Corp. recently announced plans to roll out the latest version of its word processing program that has, in the past, been criticized as difficult to learn.

Wordstar Classic Release 5 will incorporate approximately 300 features that previous versions lacked, the company said. The program is able to run on IBM Personal Computers and compatibles.

Release 5, which is slated for availability in mid-May for \$495, allows users to view the look of the entire document before printing, the company claimed. It reportedly displays font styles and sizes exactly as they will appear.

The program includes a user interface compatible with IBM's Systems Applications Architecture. It is able to perform telecommunications, outlining and mail-merge, the company said, and offers increased support of laser printers.

Other features include windows for editing two documents at once, a spell checker and a thesaurus.

Current Wordstar Professional owners can update to Classic for \$89 until May 1. After that, upgrades will be available for \$119.

Levandov

FROM PAGE 35

And the types of clones we'll see, once again, will be compatible under the strictest tests of compatibility. The ante is high. It is a much more sophisticated set of rules to achieve compatibility. It's not just the Micro Channel, it is BIOS-affected and

OS/2-affected; it is DOS implementation-level-affected as well.

Will the clones of the Micro Channel be able to run IBM's OS/2 Extended Edition?

That is where the A BIOS begins to grow in importance. I think that is going to become a very important new criterion in the analyzer's role in evaluating the

new crop of Personal System/2s — what defines compatibility and running IBM software no matter how it is written. It is also important to the extent that we can stay away from straying into gray areas that will affect the pristine nature of our copyright.

Do you think cloning is necessary to establish the

Micro Channel as a standard?

I think it is absolutely essential. The problem IBM has is that for six years, they and the industry have put between 15 million and 17 million machines into circulation with a certain kind of bus. There is a critical mass of option boards supporting that bus. So for a critical mass to be achieved again — in order for major cor-



porate purchasing decisions to sway toward the PS/2 — there is going to have to be feeling that the industry is behind the standard.

The consortium is always as important as any one player; therefore, the signal will be, if the clone industry successfully rolls out some clones in the next couple of months, it will indicate a win-win situation for IBM and

the clones.

Do you expect to see many more systems like Sun Microsystems, Inc.'s 386i, which runs multiple operating systems?

Yes. The technology we provide, coupled with the growing MIPS capability of the underlying processors, blends into that technology. Users want to get all the

benefits and maximum leverage out of the boxes they buy; and benefit and maximum leverage is a function of the software. The fact that the hardware is getting more powerful, higher in bandwidth and faster in cycle times supports the concept nicely.

How can Micro Channel donors price their systems lower, given the large up-

front investment in technology?

That is a good question. It looks like one must license the technology from IBM and some from Phoenix and buy some chips sets and then manufacture all this stuff. I believe with all that, the economics are there, so they can be very competitive with IBM. It is not like we are charging \$75 a machine.

Lotus link

FROM PAGE 35

whether a link that is easier to use than the current state of Microsoft's Windows Dynamic Data Exchange protocol will become available. As it exists, that protocol builds a dependence on the less than universal windows operating environment into application links for the MS-DOS world, a restriction that seems less useful than one providing a tie to 3 million Lotus users.

As it did with The Application Connection (TAC), Lotus is publishing a format for data exchange in its driver, a so-called "envelope" that will go a long way in helping users to realize the long-promised benefits of application-to-application communications. The envelope is used to send units of information and commands back and forth between cooperating processes.

Communications product independence is a critical aspect of the design. Blueprint will work with the Dynamic Data Exchange under Windows in the DOS world — the Data Link Libraries are under OS/2. In local-area network environments, the named-pipe protocol will be an alternative. At the departmental level, there is no reason why DEC shops cannot join the party if Network Innovations delivers.

Blueprint will rely heavily on Lotus's LEAF. "LEAF is the front end in the architecture," Sherr said. The runtime version will coincide with 1-2-3 Release 3, allowing front-end customization for software vendors and corporate programmers.

For Lotus users, Blueprint is the enabling step for true peer-to-peer applications. With TAC, near-time updates is possible today through an autorefresh capability that polls host data bases and updates the workstation application when appropriate. In a true LU6.2 environment, a scenario driven by host events is possible, since either end of the connection may initiate actions.

Adrian is managing editor of the *Focus Systems Journal* for Information Builders Publishing in New York.

SDFS for VM/CMS

The CMS/MVS Toolkit provides CMS users with a facility like TSO's SDFS.

ChicagoSoft

(312) 525-6400

A screen star is born.

Introducing Ultrasync. The high-resolution, asynchronous color monitor that's PC and PS/2 series compatible..

Ultrasync, with its exceptionally fine (.28mm) dot pitch, creates a picture of incomparable clarity. Capable of displaying infinite shades of brilliant color with striking contrast and dimension.

But the real beauty of Ultrasync is its versatility. It has the greatest autosynchronizing frequency range combination available with 45Hz to 120Hz vertical scan range (NEC's Multisync starts at 50Hz and peaks out at 75Hz) and 15KHz to 35KHz horizontal scan.

Plug Ultrasync into any IBM PC/PS series, Apple Mac II, or practically any computer system and it will adjust automatically to the standard you are using. There's no fiddling with switches or knobs. Our automatic picture sizing feature prevents display distortion and shrinkage. A simple built-in text switch is provided for your convenience. What's more, you'll enjoy the ease and comfort of Ultrasync's ergonomically advanced design.

Nobody but Princeton Graphic Systems could bring you an image with such star quality at a suggested retail price that's remarkably affordable. \$849. After all, we've been doing it all along.



601 Irving Street, Building A, Princeton, New Jersey 08542 (609) 983-1000

PCTools

CONTINUED FROM PAGE 35

When it finds one—and, over time, it will find more than one—it tries very hard to recover the data at risk.

It then moves this data and locks out the bad cluster so that other data will never again be assigned there.

And it offers excellent format protection; its own Format program can lift data, format a disk and replace the data. PCTools apparently now also has this ability, but it was not able to be tested in the time available.

Also distributed by Mace is a package called Hlist/Hformat. If viewed on a per-per-one basis, this would be one of the

most expensive programs around. In fact, this package might well be used only once per system.

Htest tests the hard-disk controller card as well as what the software can be expected to be able to do. It then goes on to test the disk itself in a number of ways that result to be accessible only with handwritten programs.

Over and over
Hformat does a low- or machine-level format of a hard disk, but it does not stop there. It also tests each track repeatedly, to the limits of its user's patience, for bad spots.

This kind of per-one testing can save a host of troubles later and could even find a poor disk within its warranty period.

But the real glory in this package comes from its Hoptimum program. This program will test a whole computer, drive card and disk system as a single unit—not for integrity, as other programs do, but for a very tricky performance issue.

Features for efficiency, speed
Hard disks have a feature called interleave. After a unit of data comes around the disk to be read, the system might find that it needs the next data sector or cluster.

For a plain vanilla IBM Personal Computer XT or PC AT, it is too late to read the next unit of data at this point, because these machines are not fast enough. To keep efficiency up, the data is worked.

On an XT, a continuous file uses every

sixth or seventh location on the track; with an AT, every third file is used in most cases.

But what is optimum? It took more than a week to test an XT clone some years ago with different interleave factors and thus discover that in this case, a value of seven was optimum.

If you have a system that is in any way nonstandard or that may have been suboptimally adjusted at the factory—even IBM was guilty of this some years ago—the use of Hoptimum can buy you modestly to considerably improved performance with minimum effort.

Elkins is a computer and management consultant with academic interests in advanced public-key data encryption systems.

Publishing

CONTINUED FROM PAGE 33

docs of pages long rather than one page at a time. For instance, if a user inserted a new paragraph into the first page of a very long document, the IBM-Interleaf program would automatically reposition the text or graphics throughout the rest of the document. This is something most personal publishing systems cannot do, according to IBM.

Among the enhancements announced last week were data export programs allowing both the Model 80 and the RT PC to create a bridge to IBM's mainframe-based publishing products and foreign language dictionary programs for French, German and Spanish that let the RT PC Edition perform concurrent multilingual spelling verification, correction and hyphenation within the same document.

With the aid of a special adapter card and interpreter program for Postscript, users can use IBM's 4216 Personal Pageprinter with the RT PC under AIX for the first time, a spokesman said. AIX is IBM's Unix-compatible operating system.

The Interleaf Publisher requires an Intel Corp. 80386-based PS/2 Model 80 with at least 6M bytes of random-access memory and a 40M-byte hard disk. It is priced at \$2,495. The RT PC Edition is priced at \$6,595.

Epson

CONTINUED FROM PAGE 33

the EX-800 is \$699; the LQ-500 is now \$529; the LQ-850 is \$849; and LQ-1050 is priced at \$1,199.

The PC price decreases ranged from \$96 to \$196, the company said. The price for the hard-disk configuration of the Equity III + PC dropped to \$3,299, and the price of the floppy-disk version dropped to \$2,199. The price of the Equity II + PC dropped to \$2,699.

According to Steve Lapinski, vice-president of marketing, market conditions caused Epson to increase productivity at its Portland, Ore., manufacturing facility. Epson recently completed an expansion of that facility, which added 100,000 square feet of work space that will be used to produce more Equity III + and Equity LT PCs and the FX-286E and LQ-1050 printers.

Lapinski said the ramped-up production facilities will "ensure more consistent pricing and reduce our offshore production capacity."

WeakCASE

Staff Isolation

This is what happens when you approach the application development life cycle with unintegrated CASE tools, each with its own logic, language and information base. The members of your development team waste more time in redundant effort and correcting errors due to faulty communication than actually creating your applications.



Up Front Savings

If you think it's what's up front that counts, you'll probably be satisfied with one of the "application generators" that pass for CASE tools. But most of these simply generate code—not complete applications—and they'll do nothing to ease the maintenance backlog that can represent up to 70% of your total application life cycle cost. So up front is the only place they'll save you money, if they save you money at all.



Speculation

Did you ever wonder where the CASE vendors of today were yesterday? Or where they'll be tomorrow? You should. Because many of them are start-up companies backed by little more than faith and venture capital. Frankly, we don't see why you'd want to speculate with your business.

JOE'S CASE SHOP



Barney

CONTINUED FROM PAGE 33

compatibility in the same box, something you need C to do. C is combined with a healthy dose of assembler anyway, the Lotus folks say.

The main reason Lotus is rewriting the product in C is to make it portable to a broad range of environments. Hopefully, the C implementation will avoid the possibility that subsequent versions will not be so late.

Hey Phil, isn't Paradox, your speedy data base package, written in C? And don't you sell a product called Turbo C? If C is so slow, you could rename that product C Snail.

And a super wait for Supercalc? Computer Associates may or may not hold back the release of a new version of Supercalc due to Lotus's 1-2-3 Release 3 delay.

"We are looking to come out at the same time as Release 3. We don't want to give Lotus a chance to react to our features. But if 1-2-3 is really late, we will have to go ahead and release our product," says Abraham Poznanski, president of the micro products division of Computer Associates. If you want to kick in an opinion, give Abe a call.

Hope always hurts the ones we love. Information professionals who have been around the block a few times understand that vendors blow a lot of hot

air and that promised products are almost always late. But not everyone can see that the emperor is so scantily clad.

Individual end users are buying more magazines, reading more hype and believing in this stuff. And the people who manage the end users and their systems are being asked a lot of dumb questions, like "Can I upgrade to Base IV?" or "When can I run OS/2 on my XT?" or "Can you get me SAA?"

Meanwhile, information pros are saying things like, "Maybe when it's ready" and "Forget it" and "SAA what?"

To make matters worse, the computer publications often begin to break stories about products when they are little more than a twinkle in a programmer's eyes.

"The biggest problem I have with my users is someone with less experience reading about something when it hasn't hit the streets yet," explains R. Bruce Johnson, manager of the PC Resource Center for Deloitte Haskins & Sells.

Some users have suggested an interesting solution. If a publication is writing one technical article aimed at the savvy, it should write another aimed at the less sophisticated. The second article would explain what is really going on. Typical headlines would probably read: "Don't even think about this," "They were late before and will be again" or "Your system just can't handle this software."

Barney is a *Computerworld* senior editor, micro-computing.

s PACBASE



Teamwork

PACBASE is an integrated, comprehensive system with a common user interface for each phase of the application development life cycle. It lets analysts, designers, programmers, data and database administrators work with the same set of specifications stored in an active enterprise dictionary. This integrated approach fosters communication and allows each team member to build on work from preceding phases to get applications up and running quickly.

Life Cycle Savings

PACBASE was designed to help you realize cost savings throughout the application development life cycle. Up front, it saves by automatically generating complete applications, including COBOL programs, screen maps, database descriptions, on-line help and documentation directly from your specifications. Because these specifications are reusable, successive applications may draw upon earlier ones to increase savings and development efficiency. Maintenance savings are even greater. Change a specification and PACBASE will regenerate all components of all affected applications.

Investment

At CGI, CASE is a long-term investment, not a speculation. We've provided solutions with PACBASE for more than 15 years, at over 550 installations worldwide. With current earnings exceeding \$115 Million—and 20% of earnings invested annually in R&D—we are financially stable and committed to keeping PACBASE state-of-the-art.

Compare other CASE products to PACBASE, and you'll see: the others present a pretty WeakCASE. Discover the strength of a true full life cycle CASE system. For more information about PACBASE, contact CGI Systems today:

1-800-PAC-1986

PACBASE: Seeing is Believing



CGI Systems, Inc.
One Blue Hill Plaza, P.O. Box 1945
Pearl River, NY 10968 (914) 735-5500

Show Me!

For a live PACBASE Executive Presentation, simply write PACBASE on your business card and attach it here. Then send it to our Marketing Department, and we'll contact you to arrange a date that's convenient for you.

Finkelstein

CONTINUED FROM PAGE 35

terchange and query language. Because of numerous SQL dialects, IBM chose to emulate its own DB2 SQL, permitting the development of tightly integrated and portable applications. The Data Manager duplicates DB2's return codes, error messages and catalog names. It also duplicates DB2's SQL program-based logic to an extent that other PC SQL vendors cannot match.

Implicit in cooperative processing is the notion that all participating platforms have equal reliability and stability. Together with the PS/2's hardware reliability, the Data Manager offers a powerful DBMS platform that includes automatic transaction management, full security and a complete set of data administration utilities.

In its initial release, the Data Manager will support an end-user-oriented SQL facility. This will help end users develop SQL queries through a series of windowed questions and answers. IBM's version of the C language will have a form-based application development system, which will be in the first release. Future releases will support Cobol, Pascal and a more robust forms system. IBM will also complete the SQL syntax with the inclusion of the Union command.

These tools are just the beginning. IBM will woo third parties with an open data base platform and a potentially huge customer base. Borland International has already pledged its support, and more tools are on the way.

Eventually, there may be hundreds, or even thousands, of vendors supporting the Data Manager. This will give users more choices and will ease user's transition from a stand-alone environment to the new world of cooperative processing.

But the single-user world that IBM will target initially has limited value in the era of cooperative processing. IBM, however, has already announced intentions to ship a multipuser, requester-server version of the Data Manager.

Corporations will likely consider the Data Manager to be an important component in IBM's future distributed DBMS architecture. Whether IBM will dominate the PC world the way that IMS and DB2 have ruled the mainframe world is an open question, but the potential is definitely there.

Finkelstein is a senior consultant with the Cold and Data Consulting Group in Chicago and publisher of the "SQL Review" newsletter.

NEW PRODUCTS

Software applications packages

A product for use in disaster recovery plan development has been introduced by M-Plus Consulting Services.

Called Basic-Recovery, the product provides a planning document that includes the required project work plan, 20 predefined planning forms, a maintenance and testing process and a supporting personal computer-based data collection and reporting module.

Basic-Recovery costs \$975. M-Plus, 1806 R. Northwest Highway, Arlington Heights, Ill. 60004. 312-255-7400.

A software system that enables a user to analyze and cross-reference a multifactor data base and manage time and activity schedules has been announced by Marcor Personal Computing, Inc.

The Eighty/20 Client Information Management System allows analysis of customers based on up to 16 different criteria, such as company type, sales volume, buying patterns, distribution and pricing. As a time and data manager, the software turns appointments into a visual calendar and offers a choice of daily or monthly schedules.

Other features include a built-in word processor and add-on modules for completing expense reports, product and price tracking and time billing.

Eighty/20 costs \$495. On-site training is available at additional cost.

Marcor, 6101 Baker Road, Minneapolis, Minn. 55345. 612-931-1280.

A graphics modeling program that allows users to create personal computer-based models that can be used to perform finite-element analysis of engineering designs has been announced by MacNeal-Schwendler Corp.

Called MSC/Mod, the software allows users of finite-element analysis to create and edit models of proposed designs and analyze their reactions to stress, vibration, pressure and temperature without building a physical prototype.

MSC/Mod files can be used by both microcomputer-based finite-element analysis software and mainframe-based packages.

MSC/Mod costs \$495.

The company also announced enhanced versions of its MSC/Pal, a three-dimensional static and dynamic stress and vibration analysis package, and its MSC/Cal, a heat-transfer program analysis package. The packages cost \$2,295 and

\$1,795, respectively.

MacNeal-Schwendler, 815 Colorado Blvd., Los Angeles, Calif. 90041. 213-559-3875.

A personal computer-based mapping package that allows users to analyze information in existing data bases and then display the results has been announced by Map Info Corp.

Called MapInfo, the software automatically creates pin maps as well as thematic maps. Users can locate a data point at any street address on the map, search a data base for points that lie within specified boundaries, create a window on the screen to display the complete data record behind any specific point or region on the map or determine the latitude or longitude of any point on the map.

New data can be loaded, or information can be used directly from Ashton-Tate Corp.'s dBase III.

MapInfo costs \$750. Map Info, 200 Broadway, Troy, N.Y. 12180. 518-274-8673.

A list management system that develops, maintains, analyzes, segments and prints lists on IBM Personal Computers and compatibles has been announced by The Integrator.

List Tamer allows the user to profile, record and retrieve specific information for each record within a list. According to the vendor, it can handle any number of lists, and each list can contain up to one billion records.

Features include a memo system for each list; user-defined codes and profiles; tickler capabilities; a mail-sort option; built-in Help; and output facilities.

Print output features include the ability to print mailing labels in 13 formats and merge listings to most word processing systems.

List Tamer is priced at \$199. The Integrator, 731 Indiana Ave., Trenton, N.J. 08638. 609-393-7277.

Dreams, an integrated set of computer-aided design tools for use on the Apple Computer, Inc. family of Macintosh personal computers, has been introduced by Innovative Data Design, Inc.

The basic Dreams program can be customized with different optional modules in the form of tool palettes, symbol libraries, utilities and an integrated data base. Other features include full Macintosh II color support, layers limited only by memory, keyboard entry, zoom up to 32 times, text handling and compatibility with Adobe Systems, Inc.'s Postscript.

Dreams is priced at \$500. It will reportedly be available in July.

Innovative Data Design, Suite A, 2280 Bates Ave., Concord, Calif. 94520. 415-680-6618.

ASA/Micro-MRP, Inc. has added a configuration control option to Max, The Production Manager, its microcomputer-based manufacturing and financial control system.

The configuration control capabilities allow Max to be used in manufacturing environments where the finished product is made up of features and options specified at order time, the vendor said. It provides control over unique customer orders that specify features or options to be assembled or added to a base product.

Because requirements information is accessed through a primary set of bills of materials, new bills of materials are not required for every possible configuration choice.

The configuration control option costs \$2,995.

ASA/Micro-MRP, 1st Floor, Century Plaza 1, 1065 E. Hillsdale Blvd., Foster City, Calif. 94404. 415-345-6600.

A network version of the Relay Gold personal communications software package and micro-to-mainframe link has been announced by VM Personal Computing, Inc.

The network version, available for the IBM Personal Computer network, the IBM Token Ring network, Novell, Inc. networks and other IBM Netbios-compatible networks, is said to allow users to transfer files with IBM mainframes running the vendor's Relay/VM or Relay/TSO mainframe software. Network members can connect asynchronously through IBM 3270 emulation boards or protocol converters.

Other features include background operation, a script language and an untended mode.

The network version of Relay Gold costs \$250 plus \$75 per node.

VM Personal Computing, 41 Kenosia Ave., Dunbury, Conn. 06810. 203-798-3800.

An accounting software package for the health care community has been announced by Great Plains Software, Inc. and Health Care Communications, Inc. (HCC).

Called Plains & Simple Healthcare Accounting, the program was designed for use with HCC's Macintosh series of software. It can be used for general ledger and accounts payable functions, while the Macintosh series automates patient records and billing procedures.

Features include sample charts of accounts, retention of accounting detail, the ability to review reports on the screen, Help messages and support for multiple windows.

Plains & Simple Healthcare Accounting costs \$695. It is available for the medical, optical, dental and chiropractic fields. Great Plains Software, 1707 S.W. 38th St., Fargo, N.D. 58103. 701-261-0550.

Software utilities

IMRES has introduced an interface to its Micro Control personal computer-based financial reporting system for users unfamiliar with syntax-driven report writers.

Called Telepath, the interface incorporates IBM's Systems Applications Architecture standard screen format, the vendor said. It is menu-driven and prompts the user to follow the most typical and logical path of report creation. Standard report formats can be predefined, but a user may also redefine the formats to meet specific needs.

Telepath is available to current Micro Control users at no cost. It is included with a site license of Micro Control, which is priced from \$70,000. IMRES, 1531 Washington Blvd., Stamford, Conn. 06902. 203-323-6500.

A version of the Bookmark disaster recovery software program has been announced by Intelsoft International for use with Apple Computer, Inc.'s Macintosh Plus and Macintosh SE.

Bookmark is a disk accessory designed to store unusable work to a hard disk. It can also be used to save files to floppy disks at user-specified intervals.

Bookmark supports the Apple Macintosh Plus environment. It can be used as a multi-level Undo function.

Bookmark costs \$99.95. Intelsoft International, 51 Digital Drive, Novato, Calif. 94949. 415-883-1188.

A random-access memory resident utility designed to increase storage capacity on hard disks with IBM Personal Computers has been announced by Isegon Corp.

According to the vendor, Newspace automatically and transparently compresses word processing, spreadsheet and other data files. In addition, users can retrieve the last five deleted files. Files that are backed up or copied onto diskettes arrive uncompressed.

Isegon, 330 Seventh Ave., New York, N.Y. 10001. 212-967-2424.

An add-in utility for Lotus Development Corp.'s 1-2-3 that includes six tools has been announced by Funk Software, Inc.

The six tools that make up Worksheet Utilities are a formula editor, a file manager, a search and replace facility, a

print settings manager, a range column with function and an automatic save facility.

The package is offered on both 3½- and 5¼-in. diskettes. It costs \$99.95.

Funk Software, 222 Third St., Cambridge, Mass. 02142. 617-497-6339.

International Microcomputer Software, Inc. has announced several software utilities for IBM Personal Computers and compatibles.

Pageperfect is an integrated word processing and desktop publisher. It costs \$495.

Dr. Halo III is an enhanced version of the original Dr. Halo freeshad graphics software. It includes laser, color palette editor and support for the virtual-page feature and video graphics arrays. It costs \$129.

Reflection is a file transfer and conversion program that provides compatibility among IBM, Apple Computer, Inc., Macintosh and Commodore Business Machines, Inc. Amiga computers. It costs \$79.

The Turbohalo graphics tool lets users add graphics to Borland International Turbo C and Turbo Pascal. It costs \$95.

Rise is said to allow programmers using the C language to write high-level assembly routines. It costs \$79.

International Microcomputer Software, 1299 Fourth St., San Rafael, Calif. 94901. 415-454-7101.

Ewing Systems has introduced a proofreading utility for use with Wordperfect's Wordperfect secondary merge files.

Proofread scans a Wordperfect secondary merge or notebook file and automatically removes exact duplicates, flags possible duplicates, flags records that do not contain the proper number of fields and reports on missing end-of-record marks. The information is then sent to a Wordperfect file or to a printer, where it can be used to make corrections.

Proofread runs on IBM Personal Computers and compatibles. It costs \$69.95.

Ewing Systems, Suite 14, 409 W. 24th St., New York, N.Y. 10011. 212-675-1974.

Technical Systems Consultants, Inc. has introduced Uniflex/XT for Apple Computer, Inc.'s Macintosh II computer system.

Uniflex/XT is a real-time operating system designed for the Motorola, Inc. 68000 series of microprocessors. It was written in assembler language and offers such features as message exchanges, shared data sections, a named enqueue/dequeue mechanism for semaphores and resource control, full real-time task priority control and a search and replace facility, a

Continued on page 42

If you can see the difference,
you must be looking at the price.

we never
stop
asking

What if...

Hewlett-Packard Company
18110 S.E. 34th Street
Cameo, WA 98607

Dear Reader:

This letter was printed on two of the finest printers available today. One half on a laser printer, the other on the new HP DeskJet Printer. But which one printed which half? Hard to tell, isn't it?

Small and quiet enough for your own desk, our HP DeskJet Printer gives you clean, crisp text and graphics. Just like a laser. You get perfect printing from A to Z. Look for yourself.

Aash-Cobdina JKLINW HP DeskJet Printer

So which half is from the laser printer and which from the new HP DeskJet Printer for under \$1,000? Not sure? That's the point. To see the difference you've got to look at the price. So call for the name of your local dealer and a free brochure on the new HP DeskJet Printer at 1 800 752-8500 Ext. 904A.

Sincerely,

HEWLETT-PACKARD COMPANY

Greg Wallace
Greg Wallace

Laser Printer

HP DeskJet Printer

The New HP DeskJet Printer. Laser-Quality Output for Under \$1000.



HEWLETT
PACKARD

Continued from page 40
tiguous file system.

A standard system is priced from \$750.

Technical Systems Consultants, 111 Providence Road, Chapel Hill, N.C. 27514. 919-493-1451.

A software utility that allows Hewlett-Packard Co.'s Deskjet printer to print engineering drawings and business graphics has been introduced by Insight Development Corp.

Called Deskplotter, the software is a personal computer-resident program that converts vector information into a format that can be printed by the Deskjet.

The user sets certain print characteristics to match application requirements. Pen patterns and pen widths can be selected from a menu. A gray-scaling option is also included.

According to a company spokesman, Deskplotter allows any program that outputs HP's HPGL to be used on the Deskjet. Deskplotter costs \$129.

Insight Development, Suite 140, 1024 Country Club Drive, Moraga, Calif. 94556. 415-376-9451.

A front-end data handling software package called Dataplex has been announced by Tools & Techniques, Inc.

Written in Microsoft Corp.'s Microsoft C, Dataplex provides a consistent user interface for all data entry and handling tasks, the vendor said. It automatically recognizes inherent patterns in data and summarizes them.

Information acquired in Dataplex's own disk format can be stored or transferred directly into Ashton-Tate Corp.'s dBase, Lotus Development Corp.'s 1-2-3 or ASCII files. In addition, Dataplex can filter and sort records and format and rearrange fields while data is being transferred. Dataplex also reads the same file formats it writes.

Dataplex costs \$149.
Tools & Techniques, 1620 W. 12th, Austin, Texas 78703. 512-482-0624.

Software enhancements

Sapana Micro Software has enhanced its Mail-Track-II and Mail-Track-III mailing list management packages for IBM Personal Computers and compatibles.

Enhancements include a utility for creating mail application templates and report-generation formats; the ability to report near duplicates based on user-specified criteria while merging two files and entering addresses; up to 10 levels of duplicate detection; a report format that includes page breaks, field headings, and page headings; and global search and replace.

Mail-Track-II, priced at \$95,

can handle up to 32,768 addresses; Mail-Track-III, priced at \$195, can handle up to 999,999 addresses in a file.

Sapana, 1305 S. Route, Pittsburg, Kans. 66762. 316-231-5023.

An enhanced version of the OfficeWriter document processing applications package for IBM Personal Computers and compatibles has been announced by Office Solutions, Inc.

OfficeWriter 6.0 has more than 40 additional capabilities, including graphics page preview, a desktop editor, a Postscript printer support and forms management. A forms creation and list processing program allows users to create forms, enter information into a form, message lists and print a form with merged information.

Included in OfficeWriter 6.0 are user guides, keyboard templates, a reference ruler and a quick reference guide.

OfficeWriter 6.0 costs \$495.
Office Solutions, 2802 Cedar St., Madison, Wis. 53713. 608-274-5047.

Dragonfly Software has released Version 3.0 of its Nota Bene word processing software package for IBM Personal Computers.

Enhancements include a 100,000-word spelling checker with a 15,000-word exceptions dictionary, a thesaurus and screen editing, font handling and document formatting features designed to optimize the software for use with laser printers.

Other features include text retrieval, the ability to mark additions and deletions to text for confirmation, a word count display, expanded file import and export support, 15 automatic section outlining levels and automatic envelope printing.

Nota Bene costs \$495.
Dragonfly Software, Suite 606, 225 W. Broadway, New York, N.Y. 10013. 212-334-0445.

An enhanced version of the Pertmaster Advance project management software has been announced by Pertmaster International.

Version 2.0 reads and writes data on project progress and schedules to data bases for reporting and graphics, according to the vendor.

Support is provided for such database packages as Ashton-Tate Corp.'s dBase III and Amn Software's Paradox.

Other features include the ability to provide reports to Capex Corporation to specifications and output color prints.

Pertmaster Advance Version 2.0 is priced from \$1,495.

Pertmaster International, Suite 340, 3235 Kifer Road, Santa Clara, Calif. 95051. 408-736-6800.

Version III of Instant Replay has been announced by Nostradamus, Inc.

Version III includes screen compression, a bracketed editor featuring a full-page editor mode, prompt compression, improved branching menu support, replay macro calls, network support, a look-ahead editor, an updated manual, IBM Personal System/2 support, support for nested menus and an insert guide addition.

Instant Replay Version III costs \$149.95.
Nostradamus, 3191 S. Valley St., Salt Lake City, Utah 84109. 801-487-9662.

An enhanced version of the VCN Concordance presentation graphics and desktop video software package has been announced by Visual Communications Network, Inc.

Version 2.0 supports IBM's Video Graphics Array standard. Also, all images in the data base make use of IBM Enhanced Graphics Adapter resolution and color. Enhancements to text capabilities include left, right and center justification and a command for grouping objects and classes.

Features include such objects as interpolated curves, polygons and multiline drawings and high-resolution business charts. Output devices supported include Calcomp's Plotmaster, Hewlett-Packard Co.'s Plotjet and Canon, Inc.'s Laserprinter LBP-8A2.

VCN Concordance costs \$695.
Visual Communications, 238 Main St., Cambridge, Mass. 02142. 617-497-4000.

Meta Software Corp. has ported its Design/3.0 hierarchical design graphics editor to IBM microcomputers and compatibles under Microsoft Corp.'s Windows.

Design/3.0 supports standard and custom designed objects, allowing users to create or import graphics objects for specialized needs.

Design/3.0 diagrams can be transferred back and forth between an IBM micro and an Apple Computer, Inc. Macintosh.

Features include the ability to realize objects, assign text to any object or connector and use hypertext in associating descriptions with an object without obscuring it. Hierarchical multi-page diagrams can have up to 9,999 pages.

Use include system design flow charts, communication networks, simulation diagrams, technical documentation and organizational diagrams.

Design/3.0 costs \$350.
Meta Software, 150 Cambridge Drive, Cambridge, Mass. 02140. 617-576-6920.

Lifehost Associates, Inc. has enhanced Timeslicer, which is a multitasking, linkable library of

C-functions.

Timeslicer Version 5.0 is compatible with Microsoft Corp.'s C Language Versions 4.0 and 5.0, Borland International's Turbo C and Lattice, Inc.'s C 3 family. Enhancements include multiple, user-defined critical classes, terminate and stay-resident functionality, the ability to terminate tasks other than the current one, math coprocessor support, improved event counters and timers and expanded documentation.

Timeslicer 5.0 costs \$295. Registered users can upgrade for \$75.

Lifehost, 55 S. Broadway, Turrytown, N.Y. 10591. 914-332-1875.

Harvey Software, a division of BHC, Inc., has released Version 2.0 of its Computerized Parcel System United Parcel Service manifesting software package for IBM Personal Computers and compatibles.

Enhancements include nine new screens, including support for Canada, Europe and Alaska; multiple printer support; multiple label formats; ASCII data file interface; and a user interface that includes automatic label eject, a second address line, an optional information label and simplified rate calculations.

The Computerized Parcel System costs \$395.
Harvey Software, P.O. Box 06596, Fort Meyers, Fla. 33906. 813-482-8600.

Microstat-II, an enhanced version of the Microstat microcomputer-based statistics package, has been introduced by Ecosoft, Inc.

According to the vendor, Microstat-II features expanded graphics and color capabilities, allowance for unequal cases, alias variables, a simplified command mode and enhanced input-and-export data capabilities.

Microstat-II costs \$395.
Ecosoft, 6413 N. College Ave., Indianapolis, Ind. 46220. 317-255-6476.

Training

A video-based training program designed to introduce users to Lotus Development Corp.'s 1-2-3 spreadsheet application package has been introduced by Sofvision, Inc.

The course complements an organization's ongoing training program, allowing users to become familiar with 1-2-3 prior to attending a course. It can also act as a supplement to Lotus-supplied manuals.

Sofvision's training program videotape is set in a business environment. It guides users through a series of integrated tasks, ending with the successful completion of a spreadsheet.

The program includes a videotape in either VHS or Beta for-

mat, an instructor's guide and a student kit complete with workbook and a 5¼- or 3½-in. diskette. It costs \$449. Additional student kits cost \$39 each.

Sofvision, 140 Wood Road, Braintree, Mass. 02184. 617-849-3551.

Data storage

Rodime, Inc. has announced three external Winchester disk drive suboptions for Apple Computer, Inc. Macintoshes.

The Rodime 60 Plus, the Rodime 100 Plus and the Rodime 140 Plus offer formatted capacities of 62M, 104M and 144M bytes, respectively. All feature a 28-msec average access time, and all have embedded smart computer systems interface controllers.

The Rodime 60 Plus costs \$1,795; the Rodime 100 Plus costs \$2,295; and the Rodime 140 Plus costs \$2,595.

Rodime, 901 Broken Sound Pkwy. N.W., Boca Raton, Fla. 33431. 305-994-6200.

General Computer Corp. has added Hyperdrive FX/80, Hyperdrive FI/60, Hyperdrive FX/60 and Hyperdrive FI/60 to its series of hard disks for the Apple Computer, Inc. Macintosh.

The Hyperdrive FI/60 and FI/60 are internal hard disks for the Macintosh II that offer 80M and 60M bytes, respectively. They connect to the Mac's internal power and small computer systems interface (SCSI) connections.

The Hyperdrive FX/80 and FX/60 are portable external versions of the FI models for the Macintosh Plus, Macintosh SE and Macintosh II. They attach externally to the Mac's SCSI.

The Hyperdrive FX/80 costs \$1,999; the Hyperdrive FI/80 costs \$1,899; the Hyperdrive FX/60 costs \$1,699; and the Hyperdrive FI/60 costs \$1,599.

General Computer, 580 Winter St., Waltham, Mass. 02154. 617-890-0880.

A 32M-byte removable disk drive for IBM Personal Computers has been introduced by Western Dynamics Corp.

The Dynex Datamodule can be exchanged among all IBM PCs, PC XT's, AT's and compatible computers, the vendor said, allowing different computers to access the same 32M bytes of data. It is a Winchester disk drive, and additional Datamodules can be added, providing unlimited storage.

Prices start at \$695.

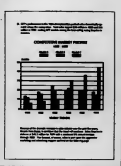
The company also introduced a 310M-byte fixed and removable subassembly with a small computer systems interface. Called the DM-310, the subassembly contains one fixed and one removable 155M-byte Winchester drive. It costs \$12,000.

Continued on page 44

How to look good from start...

we never stop
asking

What if...



to finish.

**The HP LaserJet
Series II Printer.**

Nothing brings your ideas to life like the HP LaserJet Series II Printer—from office memos to forms to newsletters. As the leading laser printer, it works with all popular PCs and PC software packages. And, with a wide range of fonts, you get more options to create superior looking documents.



With additional memory you can even print sophisticated 300 DPI full-page graphics. And with HP's ScanJet scanner, you can also easily add photographs, illustrations and text.

No wonder more people choose the original over all other laser printers combined.

So call 1 800 752-0900, Ext. 900D for your nearest HP dealer.



**HEWLETT
PACKARD**

Continued from Page 42

Western Dynamics, 3536 W. Osborn Road, Phoenix, Ariz. 85019. 602-269-4401.

A 49M-byte hard-disk card for use with IBM Personal Computers and compatibles has been announced by Origin International.

The Inboard-49 offers an average access time of 65 msec. It installs in one slot of the PC and can be used as a second drive with the existing hard-disk controller. It is Intel Corp. 80286 compatible and operates in 8- and 16-bit slots.

The Inboard-49 costs \$749. Origin, 20675 Bahama St., Chatsworth, Calif. 91311. 818-340-7552.

A family of multifunction tape drives developed for the Apple Computer, Inc. Macintosh has been introduced by Irwin Magnetic Systems, Inc.

The systems offer support for A/UX, Apple's Unix operating system for the Macintosh II. The external drives use the small computer systems interface (SCSI) and operate with industry-standard DC 2000 minicartridge tapes. The two currently available models are capable of storing 40M and 64M bytes.

The 40M-byte tape drive for the Macintosh II A/UX system costs \$1,395. The 64M-byte model costs \$1,595. Prices include Irwin's Entage-A/UX backup software, a selectable SCSI, a 256K-bit cache memory and a self-contained power supply.

Irwin Magnetics, 2101 Commonwealth Blvd., Ana Arbo, Mich. 48105. 313-996-3300.

A series of hard disk drives for the Apple Computer, Inc. Macintosh has been announced by Giga Cell Systems/Numata, Inc.

The Slimline series includes 40M, 60M- and 90M-byte hard disks and a 43M-byte hard disk drive and tape backup combination unit. The 40M- and 60M-byte hard disk drives feature an average access time of 28 msec. The 90M-byte drive offers a 16.5-msec average access time. The products feature embedded small computer systems interface controllers and come with software utilities that include backup and a laser writer spooler.

Prices range from \$1,395 to \$2,529.

Giga Cell Systems, 4201 Burton Drive, Santa Clara, Calif. 95054. 408-777-1049.

A 360K-byte, 54-in. external floppy-disk subsystem for the IBM Personal System/2 family has been announced by Dolphin Systems Technology.

Matchmaker offers an average access time of 81 msec. It operates with IBM PC-DOS 3.2 or higher. PS/2s can run pro-

grams directly from Matchmaker, or programs can be copied from Matchmaker to the system hard disk or the internal 3½-in. floppy disk drive.

Matchmaker costs \$349. Dolphin Systems, 603-B E. Altos Ave., Santa Ana, Calif. 92705. 714-546-6953.

Two IBM Micro Channel-compatible tape backup systems have been introduced by Sygen, Inc.

Smart Image Plus and QIC-File Plus are external devices providing 60M bytes of data backup capacity on one tape. Smart Image Plus records data onto digital data cassettes; QIC-File Plus uses quarter-inch cartridges. Both feature automatic backup capabilities and are compatible with Novell, Inc. Network local-area network software.

According to the vendor, the systems provide users of IBM Personal System/2s with access to data stored on IBM Personal Computer AT and PC XTs.

Smart Image Plus costs \$795; QIC-File Plus costs \$995. Sygen, 556 Gibraltar Drive, Milpitas, Calif. 95035. 408-263-4411.

A 133M-byte storage subsystem for use with IBM Personal Computers has been announced by Storage Dimensions, a subsidiary of Motorola, Inc. The Speedstar AT133 can be upgraded with a custom BIOS chip to increase capacity to 160M bytes, the vendor said.

Storage Dimensions also announced price reductions on its Speedstar AT120, a 120M-byte subsystem for Microsoft Corp. MS-DOS applications, and on its Lanstar LAN115, a 115M-byte subsystem for Novell, Inc. applications.

Speedstar AT120 now costs \$2,495. Lanstar LAN115 costs \$2,795.

Storage Dimensions, 961 University Ave., Los Gatos, Calif. 95030. 408-395-2688.

Printers/Plotters/Peripherals

A computer graphics drawing tablet called EasyPC has been introduced by Infotrite Corp.

EasyPC is a pressure-sensitive 1,024-by-1,024-pixel tablet for use with IBM Personal Computers and compatibles. According to the vendor, it allows the user to draw or trace directly into the computer with an ordinary pen or pencil on paper.

It is compatible with software such as Z-Soft Corp.'s PC Paintbrush and Meta Cybernetics, Inc.'s Dr. Halo in IBM's Color Graphics Adapter or Enhanced Graphics Adapter modes. It also works with software that operates under Digital Research, Inc.'s AutoCAD or Microsoft Corp.'s Windows environments.

EasyPC is priced at \$539.

Infotrite, Suite 201, 1670 S. Amphlett Blvd., San Mateo, Calif. 94402. 415-571-8766.

An enhanced version of the Discover 7320 personal computer-based scanning system has been announced by Kurweil Computer Products, Inc.

Model 20 of the Discover scanner features the ability to scan text in German, French, Italian and Swedish as well as English. It also includes a landscape mode that enables users to rotate images 90 degrees on a PC screen. Discover 7320 Model 20 includes Kurweil software, a user interface and documentation as well as a coprocessor board with 4M bytes of random-access memory, a scanner interface and a desktop scanner. The board inserts into a single slot in an IBM Personal Computer XT, PC AT or compatible.

Discover 7320 Model 20 costs \$11,950.

Kurweil Computer Products, 185 Albany St., Cambridge, Mass. 02139. 617-864-4700.

Kurta Corp. has enhanced its IS/One Input System to include an Autotek Drive interface driver and new templates for Autodesk, Inc.'s Autocad and Vernacal applications.

The Autotek driver is called the IS Remotix Version 6.1. It ensures that all Kurta tablet functions are supported by Autocad. It also supports user-programmable macros via the function keys on the Kurta tablet.

The templates are plastic overlays with preprinted commands grouped, color-coded and labeled by function.

The Autotek Desktop Interface driver is bundled with all IS/One Input Systems for DOS. IS/One costs from \$525 to \$995. The Autocad templates cost \$295, and the Vernacal templates cost \$139.

Kurta also announced a corded 12-button cursor for use with the IS/One graphics tablets. It costs \$195.

Kurta, 4610 S. 35th St., Phoenix, Ariz. 85040. 602-276-5533.

QMS, Inc. has added the QMS-PS 810 laser printer to its list of Adobe Systems, Inc. Postscript-based products.

The printer features a Canon, Inc. SX engine and supports the Postscript page-description language. The controller includes 2M bytes of random-access memory, 1M byte of read-only memory and a 16-MHz Motorola, Inc. 68000 microprocessor.

In addition to support for the Postscript typefaces, the product offers remote emulation of Hewlett-Packard Co.'s Laserjet Plus, HP's 475A plotter and Diablo Systems, Inc.'s Diablo 630. Print speed is 8 pages/min.

The QMS-PS 810 carries a

price of \$5,495.

QMS, One Magnum Pass, Mobile, Ala. 36618. 205-633-4300.

Board-level devices

Teconix, Inc. has released IBM Video Graphics Array (VGA) adapter boards for IBM Personal Computers.

The VGA Display Adapter boards support all 17 VGA display modes as well as IBM's Enhanced Graphics Adapter (EGA), Color Graphics Adapter and Monochrome Display Adapter standards. According to the vendor, the boards can drive IBM analog monitors as well as fixed- and variable-frequency digital monitors. They also provide EGA resolution of up to 800 by 600 pixels.

Two models are available:

The VGA Display Adapter, priced at \$394, and the VGA/AD, priced at \$454. The VGA/AD includes software drivers for Autodesk, Inc.'s Autocad, Microsoft Corp.'s Windows and Digital Research, Inc.'s GEM.

Teconix, 6225 Cochran Road, Solon, Ohio. 44139. 216-349-0600.

An extender board for use in developing add-in hardware products for IBM's Personal System/2s has been announced by Tiers Computer Systems, Inc.

Called the PS/X, the board acts as an extension cord for a printed-circuit board. According to the vendor, it lifts the board being tested from inside the computer housing, allowing access for instrumentation.

The PS/X is compatible with IBM's Micro Channel architecture. It features a four-layer printed-circuit board design and a logic ground-bus bar along the edge of the connector.

The PS/X costs \$225. Tiers, 2700 Garcia Ave., Mountain View, Calif. 94043. 415-965-1700.

Two variable-resolution graphics boards for IBM Personal Computer ATs have been announced by Doleen Computer Corp.

The Multimax and Multimax XL boards are based on National Semiconductor Corp.'s Raster Graphics Processor (RGP) and Advanced Graphics chip set. They can be programmed for resolutions from 800 by 600 to 1,600 by 1,200 pixels. In addition, the basic eight-plus, 256-color board can be expanded to 24 planes and 16 million simultaneous colors.

The Multimax XL has 2M pixels of video random-access memory, 256K bytes of program storage, 2K bytes of dual-ported RAM, 128K bytes of erasable programmable read-only memory and a 38.4K bit/sec. serial port.

The Multimax costs \$4,995.

The Multimax XL costs \$5,495. Doleen Computer, 18 Knight St., Norwalk, Conn. 06851. 203-855-0895.

A plug-in transaction processor board for real-time data collection applications using IBM Personal Computers and compatibles has been announced by Burr-Brown Corp.

The TM9000 board features a 7.4-MHz, 16-bit microprocessor and 512K bytes of random-access memory. Such user-defined functions as prompt and edit transactions, local validation tables, local, global and terminal-associated data variables and conditional branching and testing can be incorporated.

Each TM9000 can control up to 64 data collection workstations. Services can be connected to a standard IBM PC, PC XT or AT.

The TM9000 costs \$3,495.

Burr-Brown also announced Daped, a PC-compatible processor board for digital signal processing. It features 64K bytes of RAM and serial and parallel interfaces. It comes with a utilities debugging program and a utilities library and costs \$995.

Burr-Brown, P.O. Box 11400, Tucson, Ariz. 85734. 602-746-1111.

Teconix, Inc. has expanded its line of IBM Micro Channel memory and multifunction boards for the IBM Personal System/2 with the addition of two Micro Channel boards.

The Micromem AD offers serial and parallel I/O capabilities. It offers up to 2M bytes of IBM OS/2-addressable memory on a single expansion board as well as the ability to expand the Micromem System/2 with the addition of two Micro Channel boards.

The Micromem AD offers serial and parallel I/O capabilities. It offers up to 2M bytes of memory expansion and is hardware-compatible with EMS 4.0.

The Micromem AD with 2M bytes of memory costs \$1,145. The 2M-byte version of the Micromem 50/60 costs \$995.

Teconix, 6225 Cochran Road, Solon, Ohio. 44139. 216-349-0600.

An expansion card, called the Adcard, designed for use with Tandy Corp.'s Tandy 1000 and 1000A has been announced by Merak Industries.

The device adds four slots inside the system unit. According to the vendor, expansion cards connected to the Adcard operate as direct extensions of the bus. No external cabinet is required.

The Adcard costs \$89. A version for IBM Personal Computers costs \$79.

Merak Industries, 8704 Edna St., Warren, Mich. 48093. 313-562-9646.

Every presenter wants to make a compelling, persuasive case. And color, you'll agree, makes all the difference. It's more eye-catching. More readily understood. More

memorable. In short, color makes any desktop presentation more effective. And research proves it.

All you need is a Hewlett-Packard ColorPro Plotter like we used here, or the HP PaintJet Color Graphics Printer. Together with a PC-IBM compatible or Apple Macintosh—you can use all the popular graphics software like Lotus Freelance Plus, Cricket Presents, HP's Graphics Gallery (used below), Microsoft Chart and Harvard Graphics.

At under \$1,300, the HP ColorPro Plotter may be just where you want to start. It will turn your ideas into colorful, easy-to-grasp visuals. Or, if you need to combine near-letter quality text with color graphics, you can rely on the HP PaintJet Color Graphics Printer for under \$1,400. Whichever you choose, you'll create desktop presentations with startling color and greater impact.

For a colorful sample overhead and the name of your nearest dealer, call 1 800 752-0900, Ext. 903A.

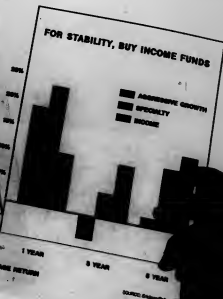
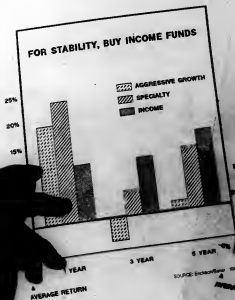
Freelance Plus® and Lotus® are U.S. registered trademarks of Lotus Development Corporation. Microsoft® is a U.S. registered trademark of Microsoft Corporation.
© Hewlett-Packard 1988



**HEWLETT
PACKARD**

What if...

Guess which presentation made the sale.





NETWORKING

DATA STREAM

Walter Ulrich

Bells' E-mail ringing sweet?



Last month, U.S. District Judge Harold H. Greene finally acceded to the AT&T regional holding companies' request for greater freedom to provide voice and text electronic mail services. The new order clarifies Greene's September 1987 ruling, which permitted the regional holding companies to offer information transmission services but left in doubt whether they could provide voice and data messaging or videotex, all of which involve the processing and storage of information.

Now that this has been cleared up, the holding companies are free to launch themselves into the voice, E-mail, videotex and audiotex markets.

In anticipation of such a decision, some of the holding companies have already designed services and begun product development.

For example, Pacific Telelink Group and Bell Atlantic have already received Federal Communications Commission approval to offer voice messaging services and plan to initiate trials later this year.

Meanwhile, customers and
Continued on page S2

Contrary to myths, ISDN works

BY PATRICIA KEEFE
CW STAFF

CHICAGO — A handful of myths about Integrated Services Digital Network (ISDN) are impeding user acceptance, according to Ian Angus, president of Angus Telemanagement Group, Inc. in Pickering, Ontario.

And they should not have, because ISDN no longer stands for "I still don't know," he told Interface '88 attendees here recently while speaking on "ISDN Test Site Revelations."

Angus, who is admittedly bullish on the technology, noted that ISDN is even mentioned in-flight magazines now — a sure sign that it has achieved broad general awareness, he joked. And the most recent AT&T is promoting ISDN, he added, do not even bother to explain what the term means.

A cornucopia of ISDN test sites have produced real examples of ISDN applications, enabling the technology to progress to the point at which the correct interpretation of ISDN should be: "It starts delivering now," Angus said.

Concerns not validated
Angus set about exploring a series of misconceptions called from a list of concerns clients had asked him to investigate. But the trials have failed to validate most of these concerns, he said, adding that ISDN works.

"We are no longer discussing whether we can deliver ISDN over twisted-pair in large environments. We are in the final details of how to deliver," he said. And given that ISDN is working, the issue now is whether anyone wants to work with it, Angus stressed.

In no particular order, Angus addressed the following typical user concerns:

- ISDN competes with local-area networks. There may be some overlap, but LAN strength lies primarily in a work group typically supporting fewer than 10 workstations, Angus said. ISDN's raison d'être, he said, is linking to the wide-area network or functioning as a bridge between LANs. It is not a replacement for LANs.

- ISDN does not offer enough bandwidth. Claiming this theory is put forth by Digital Equipment Corp. and other LAN companies, he said that ISDN's 64K bit/sec. transmission rate is 40 times as fast as most applications today.

- ISDN is a way of making users pay for the telephone networks. It is true that users are not demanding ISDN, Angus said, but

Continued on page S1

Nets beat system mix

Real estate firm links
160 nationwide offices

BY PATRICIA KEEFE
CW STAFF

NEW YORK — When real estate giant Grubb & Ellis Co. set about building its empire of 160 nationwide offices, a troublesome side effect of its acquisition spree was a crazy quilt of incompatible computer equipment.

After several false starts, the company recently embarked on a distributed network strategy that will link users within local offices as well as to other offices and a centralized data base.

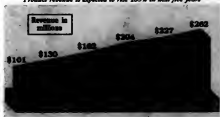
About five years ago, residential realtors Grubb & Ellis branched out into the commercial

Continued on page S1

Data View

Network management forecast

Product revenue is expected to rise 159% in next five years



INFORMATION PROVIDED BY COMPUTER INTELLIGENCE OF CHICAGO

SAA still has a way to go

BY KATHY CHIN LEONG
CW STAFF

CHICAGO — Has IBM got it made with its new Systems Application Architecture (SAA)? Not necessarily, according to William Maybaum, vice-president of Ann Arbor, Mich.-based consultancy DMW Group, Inc.

Quite a few pieces are missing yet, Maybaum told Interface '88 attendees at a session entitled "SNA: Enhancements for a new era," adding that IBM will be faced with several difficult challenges in the years ahead.

For starters, users' network trends in the 1990s will focus on better management, security and availability, he said. So the pressure is on for IBM to improve.

Continued on page S3

Inside

- Interface show, but foreign buyers show. Page 4A.
- Phase two of Microsoft ISA Gateway delivers. Page 4B.
- Voice-mail system for IBM PC XT's and AT's available. Page 5A.

Can Your Unix DBMS Guarantee Data Integrity?

Data integrity is essential for any commercial application. Unfortunately, no Unix-based DBMS product is able to provide absolute data integrity without sacrificing performance or forcing the use of complicated raw devices. Except the ORACLE® RDBMS.

The Problem

The Unix operating system uses a RAM buffer cache to hold data which is written to, and read from, the disk. This reduces I/O and enhances performance. In database applications, however, when you commit data, it must be written immediately to disk. Normally Unix can only guarantee that your data is in the buffer cache. And since that data

is usually written from the buffer cache to disk at undetermined intervals, an untimely system crash or power fluctuation could cause irreparable data corruption. Of course, this is completely unacceptable in a commercial environment.

The Solution

Unix has a special option called "write-through cache" which allows blocks of data associated with a particular file to be marked for an immediate write to disk; your application cannot continue until the write has been completed. ORACLE uses this feature to guarantee that those blocks of data associated with your database are on disk before the words "transaction completed" ever

appear on your terminal's screen. Other Unix database vendors — 1) Don't address the problem at all, 2) Force a complete flush of all data in the buffer cache causing tremendous performance degradation or 3) Require the use of complex raw devices.

Other Unix database vendors:

- 1) Don't address the problem
- 2) Sacrifice performance
- 3) Use complex raw devices

Only ORACLE approaches the problem from the commercial application implementer's point of view.

Free General Information Manual on ORACLE for Unix

See how ORACLE can unlock the power of your commercial Unix environment and provide you with exceptional data integrity, portability, and productivity as well. Call 1-800-345-DBMS and ask for your FREE copy of the ORACLE for Unix "General Information Manual." When you look closely at the critical differences between ORACLE and other Unix-based DBMSs, you'll see the ORACLE advantage.

ORACLE®
CONFIDENTIALITY • PORTABILITY • EXTENSIBILITY
Call 1-800-345-DBMS, ext. 100 today.

Copyright © 1988 by Oracle Corporation. ORACLE is a registered trademark of Oracle Corporation.

CONFERENCE NOTEBOOK

Interface '88 slow out of the gate

BY PATRICIA KEEFE
AND AMY SOMMERFELD FIORE
CW STAFF

CHICAGO — The recent disappointingly slow Interface '88 left many exhibitors and attendees harking back to warmer

thoughts of rival conference Communication Networks. Held in January, it was bustling by comparison. One exhibitor cracked that he measured the success of a show by "sales," or how far he could roll a bowling ball. At Interface, he reckoned,

he could count on a good roll.

Domestic buyers were a disappointment to exhibitors, but Interface did attract a lot of serious international buyers, according to William Lanfri, manager of market development at Moun-

tain View, Calif.-based Synoptics Communications, Inc. A number of French vendors banded together in one huge booth, hoping, no doubt, to attract some Yankee dollars.

U.S. West soothes ISDN doubters with an old quote from DEC's Ken Olsen: "There is no reason for any individual to have a computer in the home."

In other words, Integrated Services Digital Network (ISDN) should no longer be considered a "solution in search of a problem." The fact is, it works today, showgoers were told.

IBM ignore ISDN? Not according to Toby Terrell, manager of ISDN Systems and Market Planning at IBM's Communication Products Division. First, he said to look for IBM to launch a second U.S. ISDN trial in August. (IBM is already involved in the Nynex Corp. trial.)

Terrell also said ISDN will enhance IBM's Systems Network Architecture, adding that the two are complementary, not competitive.

INTERFACE'88

The icing on the cake were the following recommendations, which Terrell said are required to push ISDN to a point at which it can begin to help customers: finish standards, make sure the implementation is consistent across vendors, get competitive general tariffs that are cheap and widely available and provide planning information about availability of service, performance characteristics and projected tariffs.

Interface abounded with ISDN time lines. This one comes from Scott Augerson, ISDN product manager at Siemens Information Systems: By late 1988 or early '89, expect some ISDN-based private branch exchange (PBX) announcements offering limited shipments with a focus on circuit switching only. By 1989 or 1990, look for expanded services on ISDN, full shipment of new PBXs with a focus shift to packet switching. The 1990s will feature broadband ISDN at 600M bit/sec. and an increasing pot of services.

Wavering over token-ring? You might want to consider David Levin's point of view. Despite what you may have heard, the token-ring is not all things to all people, the president of Netcomm said.

The strengths of IBM's announced network lie in departmental or sub-departmental networking with a gateway to a broadband network. Added Synoptics' Lanfri, Ethernet sales are hot overseas, while token-ring sales are growing at a steady clip here.

Speaking of Ethernet, despite the buzz over twisted-pair wire, coaxial cable is not dead, Levin said. He advised users considering twisted-pair to consider how robust or efficient that approach might be and suggested they take a hard look at vendors' claims of supporting networking over twisted-pair.

Continued on page 49

CA-VMAN Makes VTAM Access Fast and Secure.

Increasing the security,
productivity and control
of your VTAM network.

COMPUTER
ASSOCIATES

CSI unveils OS/2 gateway

BY KATHY CHIN LEONG
CHICAGO

SAN JOSE, Calif. — Communications Solutions, Inc. (CSI) recently introduced phase two of its Maxze SNA Gateway, a product said to support Microsoft Corp. OS/2-based file servers as well as IBM 3270 and LU6.2 applications.

Maxze SNA is the first IBM Netbios-compatible network gateway to support concurrent 3270 and LU6.2 sessions, CSI claimed. The gateway will work with Microsoft's OS/2 LAN Manager.

If users only require concurrent LU6.2 and 3270 functions, the gateway reportedly can eliminate the need for the Communications Manager, a feature of IBM's OS/2 Extended Edition.

The Communications Manager provides additional 3270 and LU6.2 emulation and IBM Token-Ring network attach interfaces.

The Maxze SNA gateway reportedly can run alongside the Communications Manager without affecting any of its functions.

The first release of Maxze SNA Gateway, which supports Microsoft's MS-DOS, was announced in February and ships this month. According to CSI, the gateway runs up to 32 concurrent sessions and cuts costs by running at the file server vs. in each network node.

When the Maxze Gateway for OS/2 servers ships in January, it will only support MS-DOS workstations as network nodes, CSI said.

Pricing for Maxze SNA will be set later in the year. A third version of Maxze SNA will extend OS/2 support to the workstation. When all three versions of the Maxze SNA Gateway are in place, users reportedly will be able to run both OS/2 and MS-DOS on workstations and file servers on a single network.

Interface '88

CONTINUED FROM PAGE 48

If you're looking to cut costs, and you don't mind a little complexity, the latest trend in cheap nets is packet-switched radio, according to Robert Linberger, a professor at Brigham Young University.

Licensed by the Federal Communications Commission, this novel approach to local-area networks works within a five-mile radius and eliminates the need to drop cable every time a user moves or is added to the network.

Horsing around. Peter Vidmar, once the darling of the men's gymnastics world, was the darling of the U.S. Sprint Communications Co.-Telenet Communications Corp. booth at last month's Interface show.

The display attracted scores of attendees, due more to the star quality of its diminutive celebrity guest than to its products or services.

At the booth, the blond Olympian periodically went through his paces on the pommel horse, signed autographs and just generally looked cute.

Eicon unveils APPC support under OS/2

BY PATRICIA KEEFE
CHICAGO

MONTREAL — Eicon Technology Corp. used the recent Interface '88 to launch EiconAPPC, an intelligent adapter that provides IBM Advanced Program-to-Program Communications (APPC) support under IBM's OS/2 and Microsoft Corp.'s MS-DOS for IBM Personal System/2s, Personal Computers and compatibles.

In addition, Eicon introduced enhancements to its CITT X.25 and IBM 5250 and 3270 LAN gateways. Eicon claimed to be the first vendor to demonstrate LU6.2, or APPC, under OS/2 using an intelligent communications card, adding that it provides complete LU6.2 functionality with only 15K bytes of PC memory.

In addition, EiconAPPC is fully compatible with IBM's APPC/PC, using a 25K-byte software driver to interpret IBM calls, Eicon said. Total memory cost is less than 25K bytes; APPC/PC needs more than 250K bytes, Eicon claimed.

EiconAPPC consists of hardware and software supported over either IBM Synchronous Data Link Control (SDLC) lines or X.25 networks and multiple sessions using both FUI.1 and FUI.2.

The card is available in stand-alone configurations or on Eicon's gateways for IBM Netbios local-area networks.

EiconAPPC reportedly offers full implementation of the LU6.2 protocol, including basic and mapped conversation verbs, control operator functions and security functions as defined by IBM. When used over X.25 networks, LU6.2 is encapsulated in IBM's Qualified Logical Link Control.

The intelligent controller performs all APPC functions and, when required, X.25 protocol processing, off-loading these tasks from the host PC or PS/2.

Three different controllers are available: The SPAC card, featuring IBM Micro Channel architecture support under

DOS or OS/2; the Network Adapter, for connecting PCs or compatibles to external modems under DOS and OS/2; and the Dial Network Adapter, for supporting an integrated asynchronous modem on PCs.

The SDLC versions of EiconAPPC under OS/2 are priced at \$1,120; the X.25 versions cost \$1,330; and the Dial Network Adapter version costs \$1,420 to \$1,620. Commercial release is in May.



SOFTWARE
CONTROL
INTERNATIONAL

If you requisition, purchase or use PC products...

YOU MUST GET TO KNOW US.

Software Control International is a leading supplier of PC software, hardware products and training services.

Call today for our free catalog.

1-800-366-5555

1 Corporate Place
300 Ballardvale St., #200
Wilmington, MA 01887

CONVERSION TO MVS WHY & HOW



"... MVS is clearly the strategic platform for both maximizing the benefits of your hardware investment and providing a foundation for growth in volume and complexity of information processing."

Paul R. Hessinger
Vice President, Research
Computer Task Group, Inc.

Computer Task Group, Inc., a leading supplier of professional conversion services, is sponsoring a FREE half-day seminar for executive decision makers and MIS professionals.

Paul R. Hessinger, an internationally-known consultant and lecturer on future directions of information technologies, discusses the significance of MVS in IBM's software architecture strategy and the business and technical considerations regarding conversion to MVS. Other segments of the seminar address the concerns of companies considering conversion and the alternative conversion approaches.

Seminar dates and locations are:

May 2 Atlanta	May 18 Washington	June 3 Los Angeles
May 3 Chicago	June 1 Boston	June 24 Toronto
	June 2 Cleveland	

To register or to receive further information, call:

1-800-DOS 2 MVS, EXT. 479



COMPUTER TASK GROUP INC.
CONVERSION SERVICES

3095 Union Road
Orchard Park, NY 14127
(716) 674-9330

Novell, Inc. added another notch to its TCP/IP belt with The Wolfgang Group's release of WIN/PC Release 3.2 and WIN/PC Route Release 1.0, said to provide complete Transmission Control Protocol/Internet Protocol services and routing capabilities for Novell's Netware.

Execulim, Inc. and Micro-Internat, Inc. already provide TCP/IP services to Netware users.

Look for Telenet to offer IBM Professional Office System compatibility via the CITT X.400 standard in the near future, according to Miles Morimoto, Telenet's X.400 product manager.

Going to any lengths to keep exhibitors happy, The Interface Group presented awards for the best booth in a variety of categories at the show.

Much to Novell's amusement, it received "The Shelly Award" for the "Outstanding Mega-Island and Peninsula Exhibit." Sounds like fishing directions. If there was such an award, IBM no doubt was cited for the "Outstanding City Block-Island Exhibit."

CW staff members Charles Babcock and Kelly Shea contributed to this report.

A lousy foundation can knock your network out of whack too.



Codex high speed modems lay the groundwork your network needs to withstand the test of time.

At Codex, we believe the way to build a flexible network is to start on solid ground. Beginning with our 2600 Series high speed modems. Because above and beyond their proven strength for reliability and performance at speeds up to 192 kbps, they can support all the resources your communications network needs to stand tall over time.

Which means you can grow with them. Starting right now. With integral options like Dual Dial Restoral (DDR) and encryption to protect your business data. And an X.25 PAD to connect you to public data networks all over the world.

The Codex 2600's even offer a special Communications Test Equipment (CTE) option, plus full Codex Integrated Network Management System (INS) compatibility. So you can reduce the cost of isolating network problems and optimize productivity from a single point.

Which is the kind of performance you'll expect from the networking company with over 25 years of experience and the #1 reputation for high speed modems among datacom professionals.*



Codex 2600 Series high speed modems form a solid foundation for your network now, and as it grows.

In fact, once you hear everything our modems can do for your network, you'll lean toward Codex too. Call 1-800-426-1212, ext. 7206 for all the details. In Europe call 32-2-6608980. Or write Codex Corporation, Dept. 707-206, Maresfield Farm, 7 Blue Hill River Road, Canton MA 02021-1097.

codex



The Networking Experts

* 1987 Market Information Center Modem TPO Survey, 1988 Data Communications Brand Preference Survey. © 1988 Codex Corporation, Motorola and ® are registered trademarks of Motorola, Inc. Codex is a registered trademark of Codex Corporation. Sales offices exist in more than 40 countries worldwide. In Europe call 32-2-6608980, in Canada 416-799-1000, in the Far East PG 5-666108, in Japan RI 1-594975, in the Americas MT 964-3000.

Ulrich

FROM PAGE 47

competitors alike are wondering how the regional holding companies will use their new freedoms. Will they blow the competition out of the water? Will they give the market a healthy shot in the arm with easier local access for long-distance vendors? Or will they simply flounder awhile and then go back to just being carriers?

The regional companies, each of which is in the Fortune 50, have powerful franchises. They have an established relationship with almost every consumer and business within their regions. They already bill those customers on a monthly basis. They have mastered accounting for small transactions and sending out itemized bills for them. Altogether, this is an imposing list of attributes for any company entering the E-mail field.

Modest risk

On the voice-mail side, the companies' attributes are even more significant. All Greene suggests is that telephone services and store-and-forward voice services are greatly interdependent. The tie to telephony, the telephone instrument and the telephone company is even stronger. For voice services, the risk is modest. The restrictions are manageable, and the prospects are excellent.

However, the restrictions related to text E-mail are more troublesome. Today's E-mail users demand national — and sometimes international — reach. The regional holding companies are, by definition, regional and are prohibited from providing communications services between local access and transport areas (LATA).

According to a survey Coopers & Lybrand conducted last spring, 75% of large companies were already using E-mail. Can the regional holding companies hope to compete in such a market that is already fiercely competitive?

The best opportunity for the regional companies is with market segments that are not yet heavy E-mail users: most consumers and many small businesses, for instance. While public data networks CompuServe and The Source have made some inroads, these markets remain largely untapped. It is precisely these areas that the regional holding companies can leverage their strengths and minimize the restrictions they face.

This kind of consumer and small business E-mail and information transfer service is exactly what Greene wants to promote.

The analogy between E-mail and telephone services makes an interesting model. The regional

companies provide telephone services locally, handing off long-distance services to inter-LATA carriers. Similarly, the regional companies could handle local E-mail while handing off long-distance mail to inter-LATA message carriers. Low-cost local messaging services for consumers coupled with efficient interconnection to national services and big business would

certainly hasten the adoption of E-mail by a large new group of users.

If this eventuality were to occur, it would be beneficial to consumers, large and small businesses and most of the E-mail industry. Whether this happens is dependent upon many factors, including further regulation, marketplace dynamics, competitive reaction and the

holding companies themselves.

Steve Glasgow of Coopers & Lybrand says he sees Greene's recent order as part of a long-term tendency to gradually loosen the bonds of the Consent Decree. To the extent that this is true, the regional holding companies can be expected to aggressively provide permitted services, competing strongly with existing players. Although

controversial, the short-term implications of the regional holding companies' new freedoms are favorable. This year promises to be an exciting one for the E-mail industry, for the AT&T regional companies and for mail users everywhere.

Ulrich is president of Walter Ulrich Consulting, a subsidiary of Coopers & Lybrand.

Everybody talks OLTP Tandem does it.

SAA

FROM PAGE 47

prove its network management capabilities.

In particular, Maybaum asked, "How is IBM going to manage shops with decentralized systems?" Exactly how IBM will integrate other vendors' products into its network man-

agement picture remains to be seen. For now, third-party developers are left to create their own hooks into IBM's Netview, but actual offerings are slim.

And as AT&T's regional holding companies move to open up their networks as a result of Open Network Architecture, IBM continues to drag its feet on introducing a plan that will link user networks into the central

office switch and on creating a plan that will let users monitor both voice and data lines from a central network management system, Maybaum said.

Another issue that IBM must resolve is support for international communications standards. IBM has said that its Systems Network Architecture will interface with the CCITT X.25 standard. However, "IBM has to

realize that support for [Open Systems Interconnect] is crucial, and interfaces for X.25 aren't enough," Maybaum charged. While IBM has plans to support most major communications protocols under SAA, "it's not clear to users [or vendors] what that really means."

Maybaum ended on a bitter-sweet note: "IBM is working on all of these things, but, being

IBM, it just can't respond fast enough."

While IBM works out its snags, some users say they are willing to wait. Travelers Insurance Co., a subsidiary of The Travelers Corp., for example, is moving right along with plans to implement IBM's Token-Ring network, according to Travers Waltrip, vice-president of telecommunications at The Travelers.

Four years ago, Travelers decided every new building would be installed with IBM-type twisted-pair cabling. Today, there are approximately 60 Token-Ring networks all wired up at the insurance company, with many more to come. In addition, the company is migrating all of its 20,000 IBM Personal Computers to the successor Personal System/2 models. Clones need not apply in this IBM shop.

Dedication

Travelers is as dedicated to this industry giant as they come. Devoted to the IBM game plan, it has no intention of migrating to the International Standards Organization's OSI model.

"Why should we?" Waltrip asked. "OSI is good for companies that have many overseas offices. We are mainly concentrating here in the U.S. and Canada. Our presence overseas is trivial."

However, IBM gear cannot be found everywhere within the company. Several years ago, Travelers developed its own IBM network management program called Netpic, which manages both SNA and packet-switching networks. "We will wait and see how Netview matures and possibly convert later," Waltrip said.

OLTP fundamentals.



PRICE
PERFORMANCE

NETWORKING

DISTRIBUTED DATA

LINEAR
EXPANDABILITY

DATA INTEGRITY

SECURITY

FAULT
TOLERANCE

If you don't have them all, you don't have OLTP

ON-LINE TRANSACTION PROCESSING is the most demanding discipline in data processing. From small systems to worldwide networks, it requires on-line access to a shared database with full data integrity, full security and no downtime. You must be able to distribute data wherever needed, and it all must operate with the simplicity of a single system you can expand in any increment you choose.

WHO MEASURES UP TO TANDEM? Frankly, nobody. OLTP at Tandem is not a redesign or a retrofit. It's been our business through all the years we've been in business. Based on a single operating system and compatible hardware, it comes with excellent price/performance and full service and support. It's also easy to integrate with your existing system.

COMPARE US TO ANY OTHER OLTP SYSTEM. You'll see why companies in every major industry run critical applications on Tandem systems. For more information, write: Tandem Computers Incorporated, 19191 Valco Parkway, Loc. 4-31, Cupertino, CA 95014. Or call 800-482-6336.

TANDEM COMPUTERS
OLTP is On-Line Tandem Processing.

C4112



Questions? Problems?
Change of Address?

To give you the best available service, we've staffed a toll-free number to answer your questions and deal with any problems you may be experiencing with your subscription. If you are moving to a new address, or changing jobs, call the number to speed up the change in our subscriber files and avoid missing a single issue. If you prefer, you may write to us. Attach your mailing label, and address your correspondence to: Computerworld, Customer Service Dept., P.O. Box 1586, Neptune, NJ 07754.

In New Jersey call 1-800-325-4000

Introducing The NC When There's No Room

... PC networking, giving users access to shared files in the IXX system and PC-shared files in the IIX system as well as electronic mail and filing capabilities.

R System 10000. om For Compromise.



INTEGRATION

Advanced development languages incorporate the System 10000 to help reduce application development time.

End user needs can be translated into system requirements through picture programming and the extensive coverage of telling the System 10000 what to do, without having to tell it how to do it.

BROAD PERFORMANCE RANGE

The System 10000 combines open systems architecture with the advanced performance of NCR's 32-bit processor technology and TTX operating system. Four models provide the flexibility to meet your requirements—from a basic system to a clustered configuration with connectivity for up to 4,000 workstations.

UNCOMPROMISED SERVICE AND SUPPORT

To provide maximum system availability, NCR's System 10000 is available with our Expert System for Preventive maintenance (ESPM)...including artificial intelligence, remote maintenance and unattended analysis. Plus, NCR's service and support teams are available for over-the-phone diagnosis or an on-site call.

The NCR System 10000. Created to increase productivity for data processing and business professionals. For more information, dial 1-800-CALL NCR.

NCR

creating value

COMVISON™ IS A TRADEMARK OF THE COMVISON CORPORATION. UNCLIP IS A REGISTERED TRADEMARK OF THE ORACLE CORPORATION. NCR IS THE NAME AND MARK OF NCR CORPORATION.
© 1988, NCR CORPORATION

NEW PRODUCTS

Local-area network hardware

Paraport, an IBM-compatible parallel four-port board, has been released by The Software Link, Inc.

Designed to run with the vendor's Lanlink 5X software-based local-area network, Paraport can also be used as a multiple printer board. It supports parallel connections at rates to 0.5M bit/sec. It also uses a proprietary cabling scheme that supports a bidirectional flow of data.

Paraport costs \$495.

The Software Link, 3577 Parkway

Lane, Atlanta, Ga. 30092. 404-448-5465.

Local-area network software

Network Software Associates, Inc. (NSA) has adapted its entire AdaptSNA line of communications software for IBM Personal Computers and Personal System/2s to be compatible with Hayes Microcomputer Products, Inc.'s Autosync feature, which is incorporated in all Hayes 2,400 and 9,6K bit/sec. modems.

According to the vendor, once the telephone connection has been established,

Autosync enables the modems to transmit synchronous data over standard asynchronous links by automating an asynchronous-to-synchronous data conversion process.

The software line includes AdaptSNA AFPC, priced at \$285; AdaptSNA RJR, priced at \$785; and AdaptSNA 3270, priced at \$585.

NSA, 22982 Mill Creek, Laguna Hills, Calif. 92653. 714-768-4013.

Customer-premise equipment

Voice Computing, Inc. has released a version of its Voiceline voice-mail system for IBM Personal Computer XT's and PC AT's.

Voiceline Version 1.3 offers standard voice-mail functions as well as the ability to activate the host computer when it is turned off, call forwarding, departmentalization of messages and interruption of or transfer to the system.

The system administrator also has the ability to activate such functions as maximum message length, transfer to operator, security codes, log file, changing ID codes, line greeting, no-erase messages and customized message recipient lists.

Voiceline is priced at \$1,895.

Voice Computing, 1250 Fernside Drive, Madison, Wis. 53716. 608-221-0001.

Protocol converters

Wang Laboratories, Inc. has enhanced its IBM Systems Network Architecture (SNA) emulation products for the Wang VS minicomputers.

VS SNA Release 2.60 emulates IBM 3274 and 3277 devices and provides access to interactive and batch SNA applications on the IBM host computer. Enhancements include support of CCITT X.25 connections between the SNA host and the VS, a provision for leased-line connections that support data transmission rates to 64K bit/sec. and dial-up lines supporting speeds up to 19.2K bit/sec.

Emulation options for IBM's 3278 Model 2, 3278 Model 5 and 3279 Model S3G are offered.

VS SNA Release 2.60 includes VS SNA Standard Components, priced at \$1,000; X.25 Standard Components, priced at \$1,000; 3274 and 3277 Emulation, priced at \$1,250; VS SNA Endpoint, priced at \$750; and Virtual Terminal Interface, priced at \$750.

Wang, One Industrial Ave., Lowell, Mass. 01801. 617-459-5000.

Electronic mail

Personal EMC2, a personal computer-based electronic-mail software package, has been introduced by Fischer International Systems Corp.

According to the vendor, Personal EMC2 allows users to read and answer the vendor's host-based EMC2 mail while not connected to the host system. Users can also create mail, letters and documents. Features include an editor, in baskets, out baskets and the ability to access mainframe EMC2 to perform standard functions.

When necessary, connection to the mainframe can be made via an asynchronous dial-up connection, an IBM 3270 console connection or an IBM Synchronous Data Link Control/Systems Network Architecture remote configuration.

Personal EMC2 costs \$89.

Fischer International, P.O. Box 9107, 4073 Merchandise Ave., Naples, Fla. 33942. 813-643-1500.

Security

A stand-alone computer security device said to prevent unauthorized computer access through a modem has been introduced by Adologic, Inc.

Called Gateway II, the product installs between the modem and the computer port. If a valid password or ID code is not entered, it terminates the call. When the dial backup option is used, Gateway II will dial an authorized user at a predetermined number. Gateway II stores up

Continued on page 58

Problem: No end in sight to the growing need for more DASD storage space.



Solution: BIM-PACK

DOS/VSE Automatic VSAM File Compression

Using BIM-PACK will result in:

- Dramatic reductions in disk space requirements, 35% to 70% is typical.
- Faster retrieval when reading a file sequentially.
- Reduction in channel contention.
- Reduced backup time and the number of tapes used.
- Performance improvement in KSDS file access, due to a reduction in index levels and index records.

BIM-PACK is priced at \$8,000 for a permanent license, \$4,000 on an annual lease, or \$400 on a monthly rental. Based on the potential disk space savings BIM-PACK should pay for itself over and over again.

BIMoyle Associates, Inc. has been dedicated to providing cost effective software solutions, which improve system performance and user productivity, for ten years. For additional information on BIM-PACK or any of our other quality software products and services call Jim Kingsbury today.

BIM

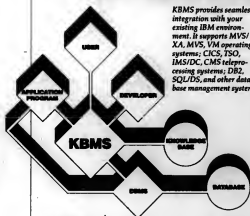
B I MOYLE ASSOCIATES, INC.
5788 Lincoln Drive
Minneapolis, MN 55436

612-933-2885

Telex 297 893 (BIM UR)

Member Independent Computer Consultants Assn.

INTRODUCING KBMS: THE FIRST KNOWLEDGE BASE SYSTEM FOR PRODUCTION APPLICATIONS.



KBMS provides seamless integration with your existing IBM environment. It supports MVS/XA, MVS, VM operating systems; CICS, TSO, IMS/DC, CMS teleprocessing systems; DB2, SQL/DS, and other database management systems.



A major computer company is saving over \$25 million a year on product ordering and configuration, thanks to expert systems they developed in-house.

A leading financial services company has substantially reduced bad credit losses with a computerized system they developed based on artificial intelligence.

These are true stories. Yet expert systems still have not taken a serious place in the business world.

Why? Because they've been available only on specialized systems using esoteric languages like LISP and PROLOG. So, like the companies described above, you could only benefit from knowledge-based systems if you had a great deal of money, people and time to make them work.

Until now.

THE PRACTICAL BREAKTHROUGH: FULL INTEGRATION WITH IBM AND DATABASE SYSTEMS.

Now AI Corp has developed a knowledge base management system called KBMS that is ready to take its place—along with database management and fourth-generation languages—as a major competitive business tool.

KBMS is a mainstream software system that is an extension of conventional DP practices. It provides seamless, high-level integration with your existing applications and databases.

The system runs under major IBM operating systems, teleprocessing systems and database management systems. It can be integrated with your existing applications by calling a KBMS module from a standard COBOL program, or vice versa. It even has the speed

and processing power to be used in high-volume, transaction processing applications.

Perhaps most important of all, you can implement KBMS using the experience, hardware and software investment you have in place already.

IMPLEMENT A NEW CLASS OF APPLICATIONS.

KBMS makes it possible for you to develop practical solutions for whole new applications areas—applications that are strategic and crucial to your business, but simply have been too complex to solve with traditional, procedural programming approaches.

For example, manufacturing companies can use KBMS to build an expert system for reviewing every incoming order for proper configuration. Insurance companies can use it for underwriting decisions to guarantee that corporate policy is always followed. Energy generating companies can use it to better predict energy needs. And financial organizations can use KBMS to enforce credit approval guidelines.

Any business problem that is complex, governed by many interrelated rules and policies, and subject to frequent change is a candidate for KBMS.

HOW KBMS WORKS.

KBMS, which stands for Knowledge Base Management System, incorporates the four key techniques of AI programming methodologies: goal-directed reasoning (backward chaining), data-driven reasoning (forward chaining), hypothetical reasoning, and object-oriented programming.

By combining these techniques in one integrated system, KBMS gives your business applications the full "reasoning" power of expert systems technology, allowing you to address a wide range of applications with a single product.

A FREE SEMINAR WILL SHOW YOU HOW KBMS CAN GIVE YOU A COMPETITIVE ADVANTAGE TODAY. CALL (617) 890-8400.

AI Corp, a developer of AI-based mainframe applications for more than 10 years, and the creator of the INTELLECT™ natural language system, is holding a series of seminars that will show you how KBMS can provide a measurable, significant and immediate return on investment for your company.

To register for the seminar in your area, please call (617) 890-8400. AI Corp, 100 Fifth Avenue, Waltham, MA 02254-9156.

AI CORP

Bringing AI Software to Business

AT LAST.
A PRACTICAL KNOWLEDGE BASE MANAGEMENT SYSTEM
FOR YOUR IBM MAINFRAME ENVIRONMENT.

KBMS is a registered trademark and INTELLECT is a trademark of AI Corp, Inc.

Continued from page 56
to 100 passwords and telephone numbers and provides an audit trail of all log-in attempts.

Two models, the Gateway II and the Gateway II Dual Back, are available. Gateway II costs \$395; Gateway II Dual Back costs \$495.

Analogic, 7844 McClellan Road, Cupertino, Calif. 95014.
408-257-1352.

Modems/ Multiplexers

A multiplexer and packet assembler/disassembler (PAD) for public and private CCITT X.25 packet-switched digital networks has been announced by Gandalf Data, Inc.

Muxmux is said to provide asynchronous statistical multi-

plexing, synchronous multiplexing, intelligent local switching and X.25 access for four to eight desktop devices or computer peripherals. It features an integrated modem card for direct connection at 9.6K bit/sec. to leased company lines. It supports input channels up to 19.2K bit/sec. and offers split-speed operation. The output composite link can operate at any speed up

to a full 64K bit/sec. level.

The four-channel Mmux costs \$995; the eight-channel version costs \$1,495.

Gandalf, 1020 S. Noel Ave., Wheeling, Ill. 60090. 312-541-6060.

Two stand-alone desktop modems designed for use over dial-up lines have been introduced by Digital Equipment Corp.

The DF212 and the DF242 models feature four levels of security, automatic speed adjustment, the ability to store up to 30 telephone numbers 36 characters long and automatic dialing capabilities. Also included are on-line error correction, built-in diagnostics and two command languages.

The DF212 transceives data at 300, 600 and 1,200 bit/sec. in asynchronous mode and at 600 and 1,200 bit/sec. in synchronous mode. The DF242 transceives data at 300, 1,200 and 2,400 bit/sec. asynchronously and at 1,200 and 2,400 bit/sec. synchronously. The products cost \$645 and \$795, respectively.

DEC, 146 Main St., Maynard, Mass. 01754. 617-897-5111.

A transcoder said to allow twice as much voice traffic on existing 1.54M bit/sec. T1 lines has been introduced by Analogic Corp.'s Telecommunications Products Group.

The adaptive differential pulse-code modulation unit is called the ATC-48.

The product is configured as a single stand-alone unit and, according to the vendor, can handle all standard voice and data formats, including M44 bundled or four-channel, robbed-bit 4.8K bit/sec. data, which embeds signaling in voice to provide four extra lines.

The transcoder supports transparent and bypass modes for high-speed end-to-end digital data transmission. Automatic re-routing of one T1 line reroutes signals around the unit should failure occur.

The ATC-48 costs \$5,000. Analogic, 8 Centennial Drive, Peabody, Mass. 01961. 617-647-1900.

An internal 300/1,200/2,400 bit/sec. modem for IBM Personal System/2 Micro Channel-based computers has been announced by U.S. Robotics, Inc.

The Courier 2400/PS fits into any PS/2 Model 50, 60 or 80 Micro Channel expansion slot. It offers autodial and autoanswer capabilities and is CCITT V.22 bis compatible at 2,400 bit/sec. and Bell 212A- and 103-compatible at 1,200 and 300 bit/sec., respectively.

Features include Help screen summaries of commands and settings, on-screen call-progress monitoring, call duration reporting and automatic speed matching with the remote modem, the vendor said.

Courier 2400/PS costs \$449. The vendor also announced a Unix-adapted version of its 9.6K bit/sec. Courier BST modem bundled with a Unix-based data communications program. The package costs \$1,295.

U.S. Robotics, 8100 N. McCormick Blvd., Skokie, Ill. 60076. 312-982-5010.

© Eastman Kodak Company 1988



The Kodak Komstar imaging system is living, growing proof of Kodak's commitment to computer output. It's a product for today and tomorrow.

The Komstar system is just what you'd expect from the leader in dry laser on-line installed COM systems. And living proof of Kodak's commitment to COM. It's a complete, integrated system for managing documents that uses laser technology to print your mainframe output on film, process it without chemicals, duplicate it, collate it, and now even create distribution labels for maximum throughput. With minimal operator intervention. And, as always, the best reliability in the COM industry, plus Kodak service and support to keep it that way. Talk to your Kodak Business Imaging Systems representative about the Komstar system, or call 1 800 445-6325, Ext. 300.

KODAK KOMSTAR
Imaging System

COMPUTER OUTPUT YOU CAN COUNT ON. KODAK



SYSTEMS & PERIPHERALS

HARD TALK

Stanley Gibson

Unearthing RISC worms



A bucket of cold water was dumped on a hyperventilating group of reduced instruction set computing (RISC) advocates recently when Neal Nelson & Associates, a Chicago-based consulting firm, released a set of benchmark results that showed the Sun Microsystems RISC-based Sun-4 being outperformed in some tests by its complex instruction set computing-based predecessor, the Sun-3.

Whether or not the test is valid is a question that will be better around for months and perhaps years to come. If the test was valid, then RISC advocates have a lot of explaining to do.

It may be too early to tell if the test was a fair one for Sun's Scalable Processor Architecture (Sparc) chip. The 10 million instructions per second (MIPS) of which Sun claims the Sun-4 is capable were reportedly compiled while running the Dhrystone benchmark, a measure of technical performance.

Responding to the Nelson results, a Sun spokesman termed the benchmark an "I/O test," not a measure of processing.

Continued on page 63

Breuners binges on automation

Boasts second place in furniture industry due to tight inventory control

BY J. A. SAVAGE
CW STAFF

SAN RAMON, Calif. — For the last 15 years, the MIS department at Breuners Home Furnishings has ridden a financial roller coaster as a result of the firm's business environment: The company was bought, sold and transferred with management alternately funding and ignoring MIS.

Breuners is now on an automation roll with its own industrial roller coaster equivalent: huge, fast elevator cranes for grabbing furniture that operate in an enormous warehouse. As a family-owned business founded in 1856, Breuners claims it is

now the second largest furniture retailer in the country. Still family-owned in the early 1970s, it was an innovator in technology. With IBM, it developed BOLTS, or Breuners On Line Terminal System. BOLTS ran for six years on an IBM 371/54.

MIS couch potatoes

The company, which now has revenue of about \$225 million, was bought by Marshall Field & Co. in 1977. According to John Longridge, management information services director at Breuners, Marshall Field left MIS in a "static" situation.

Marshall Field was using then-Sperry Corp. equipment and wanted Breuners to move to

Sperry Univac machines, but that posed compatibility problems with Breuners' IBM equipment. Instead, both companies kept their vendors, and Marshall Field eventually adopted IBM machines.

Breuners, however, began to restructure its business from a decentralized model in which each retail store had its own warehouse — the plan for BOLTS — to a centralized model, with a parent warehouse and satellite stores.

When this was done, BOLTS caused problems with the parent-satellite structure. BOLTS was rewritten to accommodate the new arrangement, and in the

Continued on page 64

Mid-frame Unisys line appealing

BY ALAN ALPER
CW STAFF

NEW YORK — Unisys Corp.'s recently disclosed extensions of its 1100/2200 "mid-frame" processor family are giving many users of entry-level Sperry Corp. 1100 mainframes a reason to remain loyal to their supplier, according to a cross section of customers surveyed recently.

Unisys Chairman "W. Michael Blumenthal did what he promised by creating a third company [from the merger of Sperry and Burroughs Corp.] that has advanced the 1100 architecture," said James Ault, president of Use, Inc., a Sperry users group, and director of information services at Creighton University.

The six-member 2200/400 family, which ranges from single- to six-processor systems, offers a hardware migration path from the 1100 Models 60 and 70 that preserves user investment in applications running under Sperry's proprietary operating

Continued on page 60

Data View

Packing disks

Amidahl 5570 supports highest average disk capacity at Amidahl user sites



INFORMATION PROVIDED BY COMPUTER INTELLIGENCE, INC. 5/8/82

Quotron gets major boost

BY ALAN ALPER
CW STAFF

NEW YORK — Spurring the entries of a host of other vendors, Paine Webber, Inc. recently extended an offer to Quotron Systems, Inc. to continue using its stock quote system at Paine Webber's 285 offices in North America. The precise value of the multimillion-dollar, five-year contract extension was not disclosed.

The brokerage firm said it will install Quotron's Unix-based

Continued on page 63

Inside

- Stratus improves customer service network. Page 60.
- Unisys adds low-cost busking printer. Page 64.
- Memorex division rolls out ASCII terminal. Page 66.

► IBM 3270 and System 3X Users.

100% IBM 4224 Compatible!

► Available Now!

With the plug-compatible ISI 7224, you can print everything an IBM 4224 can print... and more.

7224

Speeds reach 400 cps draft. You can also print graphics, bar codes, and mention characters without GDSN, BGL, or other special software. Output can be in black or up to eight colors.

Fully integrated (no box), the ISI 7224 connects directly to IBM 3174/3274/3276 controllers or S/3X terminal cable.

Forme-handling advantages include automatic paper parking, no-waste demand-document tear-off, and a slough path for still forms. No extra-cost gadgets are required. Extra features and all, the ISI 7224 costs much less than its IBM counterpart.

For more information call 1-800-544-4072 (in Michigan, 313/769-5000). Or write



Interface Systems, Inc.

Printer Solutions for IBM Systems

5855 Interface Drive, Ann Arbor, MI 48103
Telex: 870-223-6058



Is the ISI 7224 yours at 23 1/2" wide — greater than the IBM 4224. And since it's only seven inches tall, it fits tighter spaces.

Stratus maintenance centers get redundancy

BY STANLEY GIBSON
CIVILIAN

MARLBORO, Mass. — Stratus Computer, Inc., known for the redundant hardware components in its on-line transaction processing systems, recently said it plans to add redundancy to its worldwide network of maintenance centers as well.

Under the plan, which will be implemented gradually this year, four of Stratus's principal maintenance sites will become, in effect, exact copies. The centers, located here and in London, Amsterdam and Hong Kong, will each contain the same customer information, which

will be instantly updated as changes occur.

As a result, any center will be able to handle a call from any customer in the world, because information on that account will be stored at the customer center.

Worldwide help line

"This provides experts on a 24-hour basis, without a third shift being on call," said William Elliott, Stratus vice-president of product marketing. Calls made late at night will be placed to whichever center is open at that hour, according to Elliott. For example, if a New York data

center makes a call in the middle of the night, the call may go to Hong Kong, where that customer's information would be stored, Elliott said.

The system will make use of the remote diagnostics currently offered to Stratus customers who are connected to Stratus's Marlboro headquarters. Stratus said it does not plan any additional charge for what it claims will be improved service.

In response to questions about the security of customer data transmitted worldwide, Elliott reiterated Stratus's current policy regarding remote customer lookups: a customer may determine

what data is sent to Stratus. "The security level is controlled by the user," he said.

Elliott said customers requiring extremely high levels of confidentiality may establish their own service networks using Stratus software. He added that several customers thus far have purchased Stratus software for this purpose.

The four centers will be connected by leased lines, although Stratus said it is as yet unclear on whether the centers will be connected in a star configuration with Stratus's Marlboro headquarters as the hub or whether each center will be connected directly to all other centers.

Elliott said Stratus plans to add more customer centers with identical data bases to the network once the connection of the initial four is complete.



Uninterrupted Screen Image

Buy The One On The Left And You'll Have To Put It Where The Sun Don't Shine.



The monitor on the right, however, can be placed anywhere you like. Even in direct sunlight. It's the new Flat Technology Monitor from Zenith Data Systems—winner of PC

Magazine's coveted "Technical Excellence Award" in the hardware category for 1987.

You Have To See Zenith To Believe It

So clear. So precise. So lifelike. It's the only monitor with a completely flat screen. A breakthrough that has redefined monitor quality forever. Industry experts are already convinced. And once you see it in person, you'll be a believer, too.

Bigger, Brighter, Glare-Free

Our Flat Technology Monitor has an impressive 14-inch display. And even though it's bigger, it's 50% brighter than conventional CRT's and it has 70% greater contrast. So you get colors with greater depth and definition that make your reports, charts and graphs come alive like never before.

The Flat Technology Monitor is virtually glare-free. So you can work longer without the usual headaches

and eyestrains. And that means greater productivity. But to get the whole picture, you have to see it with your own eyes.

Backward And Forward Compatibility

You also get full compatibility with the high resolution VGA Video generated by IBM's new PS/2+ computers. And with Zenith's Z-449 or other VGA-class video cards, you can enjoy CGA, MDA, Hercules and EGA graphics as well.

Experience Zenith's Latest Technology Breakthrough

Obviously, a mere picture can't do justice to our new Flat Technology Monitor. It demands a face-to-face evaluation. For a hands-on demonstration, call today for the name of your nearest authorized Zenith Data Systems dealer—the Flat Technology Monitor is available in quantities right now.

1-800-553-0305

ZENITH

**data
systems**

THE QUALITY GOES IN BEFORE THE NAME GOES ON™

Unisys

CONTINUED FROM PAGE 59

system, OS 1100 [CW, March 21]. The series, which is set to ship in the fourth quarter, also extends the performance of the older 2200 family to 14 million instructions per second, the company said.

Ranging in price from \$177,951 to \$952,065, the 2200/400 series should appeal to customers who seek to disperse processors throughout various locales or departments within their organizations. By using very large-scale semiconductor technology, Unisys said, it was able to reduce the parts count on the systems by almost 90%, resulting in systems that offer four times the performance and require 70% less space, power and cooling than the 1100 models they effectively replace.

Craighead's Ault said the university is considering upgrading its two 1100/72s at some point during the next 18 months and is leaning toward the 2200/400 family rather than going with 1100 Models 73 or 74. "The price/performance of the new series is impressive for our environment," he said.

Ault said he has also entertained proposals from IBM and Digital Equipment Corp. but remains unconvinced that those vendors can match the price/performance of the 2200/400. "They've not showed us that they can tie things together with our current environment," he said.

A less obvious advantage of the 2200/400s is their ability to operate with minimal data center personnel, Ault noted. "There's a PC-based facility that provides operations functionality that makes the products perfect for departmental use."

Power needs spark applause

Other users pointed to the low power consumption and reduced footprint as key features of the 2200/400. "This product uses electricity at the same rate as a copier," said Allen Elliott, data center director of Westchester County in New York.

Westchester County recently installed a four-processor 2200/204 that will not need to be upgraded for some time, Elliott said. The county is also interested in higher end additions to the 2200 family to offload from its workhorse 1100/94.

"We're using an 1100/94 that is partitioned into four regions: three are used for production, the fourth is used for development," he said.

A Unisys spokesman declined to comment on follow-ons to the 2200/400 line beyond saying an announcement is planned for later this year.

Macintosh Today

Macintosh Today Qualified Subscription Card

Note: A free subscription to Macintosh Today will be sent to those applicants in the U.S. and Canada who qualify. The publisher reserves the right to limit the number of free subscriptions. Please answer all questions completely. Incomplete forms will not be processed. For questions regarding quantities, use specific numbers. Please sign and date this form.

Please accept my request for a free subscription to Macintosh Today ☐ Yes ☐ No

Signature _____

Title _____

☐ New Subscription Request ☐ Free Renewal ☐ Address Change (please provide old and new address)

1. Industry (check only one)

Noncomputer-related businesses

- ☐ 1. Amusement
- ☐ 2. Agriculture, mining, construction, oil
- ☐ 3. Business consulting (noncomputer-related)
- ☐ 4. College/university
- ☐ 5. Elementary/high school
- ☐ 6. Engineering/architecture
- ☐ 7. Finance, banking, accounting, insurance, real estate
- ☐ 8. Government
- ☐ 9. Health/medical services
- ☐ 10. Legal services
- ☐ 11. Manufacturing
- ☐ 12. Military
- ☐ 13. Other business services
- ☐ 14. Publishing/advertising/public relations
- ☐ 15. Research and development
- ☐ 16. Retail/wholesale
- ☐ 17. Transportation, communications, utilities
- ☐ 18. Other (specify) _____

Computer-related businesses

- ☐ 19. Computer consultant
- ☐ 20. Computer retail
- ☐ 21. Distributor/wholesaler
- ☐ 22. Manufacturer (computers, software, peripherals)
- ☐ 23. Service bureau
- ☐ 24. VAR/system house/integrator
- ☐ 25. Other (specify) _____

2. Title (check only one)

- ☐ A. Chairman/president/owner/partner
- ☐ B. Vice president
- ☐ C. Controller/insurance/accountant
- ☐ D. Director/supervisor/manager
- ☐ E. Project manager/chief/group leader
- ☐ F. Asst. director/secretary/group leader
- ☐ G. Engineer/scientist
- ☐ H. Administrator
- ☐ I. Consultant/advisor
- ☐ J. Microcomputer specialist/manager/analyst
- ☐ K. Programmer
- ☐ L. Educator
- ☐ M. Professional (lawyer, doctor, etc.)
- ☐ Z. Other (specify) _____

3. Department or function (check only one)

- ☐ A. Accounting/finance
- ☐ B. Administration/management/personnel
- ☐ C. Consulting
- ☐ D. Education/training
- ☐ E. Engineering/R&D
- ☐ F. Manufacturing/production
- ☐ G. Microcomputer center/office automation
- ☐ H. MIS/DP
- ☐ I. Purchasing
- ☐ J. Sales/marketing/distribution
- ☐ Z. Other (specify) _____

4a. Does your company own or lease any mainframe computers at this location?

☐ Yes (indicate quantity below) ☐ No

- ☐ 1. IBM _____ Existing quantity _____ Plan to buy quantity _____
- ☐ 99. Other (specify) _____

4b. Does your company own or lease any mini-computers at this location?

☐ Yes (indicate quantity below) ☐ No

- ☐ 1. IBM _____ Existing quantity _____ Plan to buy quantity _____
- ☐ 2. DEC VAX _____
- ☐ 3. Sun/Apollo _____
- ☐ 99. Other (specify) _____

5. Does your firm have or plan to buy any of the following types of personal computers or microcomputer systems at your location?

☐ Yes (indicate quantity below) ☐ No

- ☐ 1. Macintosh 128/512 _____ Currently own _____ Plan to buy within 1-12 mos. _____
- ☐ 2. Macintosh Plus _____
- ☐ 3. Macintosh SE _____
- ☐ 4. Macintosh II _____
- ☐ 5. IBM or compatible _____
- ☐ 6. Sun/Apollo workstation _____
- ☐ 99. Other (specify) _____

Please provide your business address below or affix your business card.

NAME _____

TITLE _____

COMPANY/DEPARTMENT _____

MAIL STOP _____

BUSINESS TELEPHONE _____

STREET _____

CITY/STATE/ZIP _____

Old Address: _____

SAB99

6. Please indicate your involvement with each of the following types of personal computers or microcomputer systems (check all that apply)

- | | Macintosh | Software | Networks & Peripherals |
|---|-----------|----------|------------------------|
| A. Approve purchase | A | A | A |
| B. Develop/manufacture | B | B | B |
| C. Evaluate/select vendor | C | C | C |
| D. Own one | D | D | D |
| E. Own two or more | E | E | E |
| F. Purchase or acquire | F | F | F |
| G. Establish specifications | G | G | G |
| H. Recommend to others | H | H | H |
| I. Sell | I | I | I |
| J. Train people to use / or provide support | J | J | J |
| K. Use | K | K | K |
| L. No involvement | L | L | L |
| Z. Other (specify by name and quantity) | Z | Z | Z |

If you have an involvement with any of the above, skip to question 7.

7. Do you recommend, buy, specify or approve microcomputers, software, and/or peripherals?

☐ Yes ☐ No

If yes, please indicate how many Macintosh personal computers you have this involvement. (check only one)

- ☐ A. 1-3 ☐ F. 50-99
- ☐ B. 4-9 ☐ G. 100-499
- ☐ C. 10-19 ☐ H. 500-999
- ☐ D. 20-49 ☐ I. 1,000 or more
- ☐ E. None of the above

8. How many people are employed by your entire company? (check only one)

- ☐ A. 1-9 ☐ D. 100-499 ☐ G. 2500-4999
- ☐ B. 10-24 ☐ E. 500-999 ☐ H. 5000-9999
- ☐ C. 25-99 ☐ F. 1000-2499 ☐ I. 10,000 or more

Macintosh Today

Macintosh Today Qualified Subscription Card

Note: A free subscription to Macintosh Today will be sent to those applicants in the U.S. and Canada who qualify. The publisher reserves the right to limit the number of free subscriptions. Please answer all questions completely. Incomplete forms will not be processed. For questions regarding quantities, use specific numbers. Please sign and date this form.

Please accept my request for a free subscription to Macintosh Today ☐ Yes ☐ No

Signature _____

Title _____

☐ New Subscription Request ☐ Free Renewal ☐ Address Change (please provide old and new address)

1. Industry (check only one)

Noncomputer-related businesses

- ☐ 1. Amusement
- ☐ 2. Agriculture, mining, construction, oil
- ☐ 3. Business consulting (noncomputer-related)
- ☐ 4. College/university
- ☐ 5. Elementary/high school
- ☐ 6. Engineering/architecture
- ☐ 7. Finance, banking, accounting, insurance, real estate
- ☐ 8. Government
- ☐ 9. Health/medical services
- ☐ 10. Legal services
- ☐ 11. Manufacturing
- ☐ 12. Military
- ☐ 13. Other business services
- ☐ 14. Publishing/advertising/public relations
- ☐ 15. Research and development
- ☐ 16. Retail/wholesale
- ☐ 17. Transportation, communications, utilities
- ☐ 18. Other (specify) _____

Computer-related businesses

- ☐ 19. Computer consultant
- ☐ 20. Computer retail
- ☐ 21. Distributor/wholesaler
- ☐ 22. Manufacturer (computers, software, peripherals)
- ☐ 23. Service bureau
- ☐ 24. VAR/system house/integrator
- ☐ 25. Other (specify) _____

2. Title (check only one)

- ☐ A. Chairman/president/owner/partner
- ☐ B. Vice president
- ☐ C. Controller/insurance/accountant
- ☐ D. Director/supervisor/manager
- ☐ E. Project manager/chief/group leader
- ☐ F. Asst. director/secretary/group leader
- ☐ G. Engineer/scientist
- ☐ H. Administrator
- ☐ I. Consultant/advisor
- ☐ J. Microcomputer specialist/manager/analyst
- ☐ K. Programmer
- ☐ L. Educator
- ☐ M. Professional (lawyer, doctor, etc.)
- ☐ Z. Other (specify) _____

3. Department or function (check only one)

- ☐ A. Accounting/finance
- ☐ B. Administration/management/personnel
- ☐ C. Consulting
- ☐ D. Education/training
- ☐ E. Engineering/R&D
- ☐ F. Manufacturing/production
- ☐ G. Microcomputer center/office automation
- ☐ H. MIS/DP
- ☐ I. Purchasing
- ☐ J. Sales/marketing/distribution
- ☐ Z. Other (specify) _____

4a. Does your company own or lease any mainframe computers at this location?

☐ Yes (indicate quantity below) ☐ No

- ☐ 1. IBM _____ Existing quantity _____ Plan to buy quantity _____
- ☐ 99. Other (specify) _____

4b. Does your company own or lease any mini-computers at this location?

☐ Yes (indicate quantity below) ☐ No

- ☐ 1. IBM _____ Existing quantity _____ Plan to buy quantity _____
- ☐ 2. DEC VAX _____
- ☐ 3. Sun/Apollo _____
- ☐ 99. Other (specify) _____

5. Does your firm have or plan to buy any of the following types of personal computers or microcomputer systems at your location?

☐ Yes (indicate quantity below) ☐ No

- ☐ 1. Macintosh 128/512 _____ Currently own _____ Plan to buy within 1-12 mos. _____
- ☐ 2. Macintosh Plus _____
- ☐ 3. Macintosh SE _____
- ☐ 4. Macintosh II _____
- ☐ 5. IBM or compatible _____
- ☐ 6. Sun/Apollo workstation _____
- ☐ 99. Other (specify) _____

Please provide your business address below or affix your business card.

NAME _____

TITLE _____

COMPANY/DEPARTMENT _____

MAIL STOP _____

BUSINESS TELEPHONE _____

STREET _____

CITY/STATE/ZIP _____

Old Address: _____

SAB99

6. Please indicate your involvement with each of the following types of personal computers or microcomputer systems (check all that apply)

- | | Macintosh | Software | Networks & Peripherals |
|---|-----------|----------|------------------------|
| A. Approve purchase | A | A | A |
| B. Develop/manufacture | B | B | B |
| C. Evaluate/select vendor | C | C | C |
| D. Own one | D | D | D |
| E. Own two or more | E | E | E |
| F. Purchase or acquire | F | F | F |
| G. Establish specifications | G | G | G |
| H. Recommend to others | H | H | H |
| I. Sell | I | I | I |
| J. Train people to use / or provide support | J | J | J |
| K. Use | K | K | K |
| L. No involvement | L | L | L |
| Z. Other (specify by name and quantity) | Z | Z | Z |

If you have an involvement with any of the above, skip to question 7.

7. Do you recommend, buy, specify or approve microcomputers, software, and/or peripherals?

☐ Yes ☐ No

If yes, please indicate how many Macintosh personal computers you have this involvement. (check only one)

- ☐ A. 1-3 ☐ F. 50-99
- ☐ B. 4-9 ☐ G. 100-499
- ☐ C. 10-19 ☐ H. 500-999
- ☐ D. 20-49 ☐ I. 1,000 or more
- ☐ E. None of the above

8. How many people are employed by your entire company? (check only one)

- ☐ A. 1-9 ☐ D. 100-499 ☐ G. 2500-4999
- ☐ B. 10-24 ☐ E. 500-999 ☐ H. 5000-9999
- ☐ C. 25-99 ☐ F. 1000-2499 ☐ I. 10,000 or more

MacintoshToday

15. Please list below any individuals at this location who also help to recommend, specify, acquire or approve the purchase of computer systems, peripherals, software or services to whom you would like us to send a complimentary subscription of Macintosh Today.

Name: _____	Title: _____
Name: _____	Title: _____
Name: _____	Title: _____
Name: _____	Title: _____

Please fold, tape and mail.
PLEASE DO NOT STAPLE.

Fold ▼

Name _____
Company _____
Address _____
City/State/Zip _____

AFFIX
POSTAGE
HERE

MacintoshToday
Subscription Department
P.O. Box 5456
Pasadena, CA 91107-0456

MacintoshToday

15. Please list below any individuals at this location who also help to recommend, specify, acquire or approve the purchase of computer systems, peripherals, software or services to whom you would like us to send a complimentary subscription of Macintosh Today.

Name: _____	Title: _____
Name: _____	Title: _____
Name: _____	Title: _____
Name: _____	Title: _____

Please fold, tape and mail.
PLEASE DO NOT STAPLE.

Fold ▼

Name _____
Company _____
Address _____
City/State/Zip _____

AFFIX
POSTAGE
HERE

MacintoshToday
Subscription Department
P.O. Box 5456
Pasadena, CA 91107-0456

Macintosh

has what you want. Timeliness. Side-by-side product comparisons. Trends and new technologies. Profiles of Macintosh users. Useful tips. Industry news and inside information.

When you read *Macintosh Today*, you know what's going on in the Mac marketplace. We have the most experienced editors ever assembled to produce a Macintosh publication. We know what we're writing about.

Macintosh Today was created on the Macintosh for the Macintosh. Its clear design and high quality make it easy to read for busy Macintosh users.

Best of all *Macintosh Today* is FREE to qualified volume Macintosh business and technical users. To qualify, fill out the qualification card and return it promptly.

If you wish to receive extra reader qualification cards, call 818.577.7233.

Send in your qualification card today!

Best then.



Best now.

How to break I/O bottlenecks.



Just add an Amdahl 6680 Electronic Direct Access Storage product to your data center. It's that simple.

Our 6680 EDAS—with its ultra-efficient and reliable solid state memory—delivers up to *tenfold* improvements in I/O response time.

What's more, a 6680 EDAS will probably enable you to squeeze more performance out of the equipment you already have—storage devices and CPUs.

Here's why:

You can dedicate it to handle the data your end-users request most often (studies show that 60% of all requests are to 1% of your data).

This not only enables you to respond to these requests much

faster; it also frees up your other storage devices, so you can use much more of their capacity.

In other words, by adding performance, you gain capacity.

And for your critical data...

Our 6680 EDAS offers you a battery-powered, microdisk back-up system that protects your data in the event of brown-outs or power failures.

More productivity for your money.

Our EDAS offers you just that, in spades. Because it breaks your I/O bottlenecks. And because it lets you reconfigure your storage devices in a way that makes all of them more productive.

For details, call your local Amdahl representative.

amdahl

The PRODUCTIVITY Choice

Amdahl Corporation
1250 East Arques Avenue
Sunnyvale, CA 94088-3470

Gibson

CONTINUED FROM PAGE 59

nor speed. Well, isn't I/O the manner in which most jobs, especially commercial ones, are performed?

Sun also said the Sun-4 has not been targeted for business applications. Maybe the Sun 4-ha'st, but it sure has sounded like the Sparc chip has been. The clear message has been that the Sparc chip is intended to be the platform of choice for all kinds of computing as Sun and AT&T load the user community into a brave new Unix-based world. For some time, Unix backers have been trying to get Unix into general use in business applications.

Indeed, at least one Sparc licensee,

Arix (formerly Arcis Systems), sells general-purpose business systems.

AT&T has said that its general-purpose computer systems will be migrated to the Sparc architecture, which it is licensing from Sun. AT&T still wants to crack the business market, doesn't it?

In other tests, Nelson benchmarked other RISC-based systems, including the IBM RT Personal Computer, the Mips computer processor and the Hewlett-Packard Spectrum system. In all cases the results were similar: The RISC-based system underachieved.

Not content with Nelson's single voice, I recently posed the RISC-as-a-business-processor question to a high-ranking official in hardware development at a major microcomputer manufacturer.

The executive told me that in general use, he found that the Sun-4 generally delivers about half of the 10 MIPS claimed. The executive's company has no ax to grind, because it does not compete with Sun.

No short cuts

The reason RISC sometimes offers no benefit is apparently that RISC instructions, being reduced, are shorter, and more of them may be required for the same task that a single instruction of a complex instruction set computing system might require. Thus, a high MIPS rating would not necessarily indicate that work can be accomplished faster. Only in an application in which the short instructions performed the same work of longer

instructions would this be the case.

It may be that many applications need to be optimized for RISC. If so—fine. But that means that more work will have to be done: work that is not being factored into the current headlong rush toward RISC, we suspect.

It is still early in the game: the Nelson benchmarks have just been released. But they are an auspicious opening for what promises to be a lively period of discussion. There are signs that they are generating intense interest from all sides. Sun and others invited scrutiny by their MIPS claims. Their response so far has been incomplete.

Gibson is Computerworld's senior editor, systems & peripherals.

Quotron

CONTINUED FROM PAGE 59

Q1000 system at each branch location to distribute stock quote information, financial news, office automation applications and proprietary research to brokers and executives using a mix of intelligent terminals and desktop microcomputers.

Paine Webber, which has evaluated the technology for the last two years, chose Quotron over a host of stock quote vendors, including Automatic Data Processing, Inc. (ADP), Unisys Corp. and Wang Laboratories, Inc., observers said.

THE PAINE WEBBER contract extension is considered a substantial victory for Quotron, which is struggling to retain brokerage industry customers.

Installation in the first 30 offices is expected to begin next month.

The contract extension is considered a substantial victory for Quotron, which has struggled to retain major brokerage industry customers following its acquisition by Citicorp two years ago. Merrill Lynch & Co. and Shearson Lehman Hutton, Inc. are said to be considering replacing Quotron with ADP because they are wary about doing business with Citicorp, which is viewed as a major competitor.

Paine Webber Corporate Vice-President John Murphy said the firm chose Quotron because it met all of Paine Webber's current technical requirements. "It seems we don't have the same concerns about dealing with Citicorp as some of the other firms have," he explained.

Stock quote information and news will be piped into Q1000s via Quotron's proprietary network, while client and product information residing on Paine Webber's IBM mainframe will be accessed through the branch processor.

Spreadsheet and word processing applications will reside on the Q1000, Murphy said.

Approximately 1,500 Q1000s have been installed since February 1986, according to George Levine, Quotron's marketing vice-president. Other Q1000 customers include Smith Barney, Harris Upham & Co., Dunn Witter Reynolds, Inc., Shearson Lehman and certain offices of Merrill Lynch, he added.

RENEWAL NOTICE



Have your drives refurbished by the manufacturer.

Now, Storage Module Drives (SMD) and Fixed Module Drives (FMD) manufactured by Control Data for the Original Equipment Manufacturer (OEM) market can be given a new lease on life.

Add years of service to your existing subsystem, retain the convenience and flexibility of removable media and save money, too. Having your disk drives refurbished can be easier and less expensive than you think and a better solution than purchasing a totally new storage subsystem.

WHAT YOU GET
A completely refurbished "Control



Data" disk drive updated to the most current specifications, using only genuine, original manufac-

turer parts, thoroughly tested by factory trained technicians and reconditioned to meet all factory specifications.

DO YOUR DRIVES QUALIFY?
Check the serial number tag on the inside of the drive. If it carries a Control Data or Magnetic Peripherals Inc. I.D. label, record the information and serial number, then call us for a free quotation. We'll give you all the details.

We also repair and refurbish many other disk drive models as well as disk test equipment made by Control Data.

Call us toll-free, 1-800-382-0660.

CD CONTROL DATA

Breuners

CONTINUED FROM PAGE 59

process was changed from nonnative CICS macro into command-level CICS language.

Until 1983, when Longridge was brought in during a management change-over to upgrade the MIS shop, little support was given to systems. "They were down about 12% of the time," Longridge said. For two years, it took all his time just to keep the old IBM CICS system from going down. Since then, he said, the system is down less than 2% of the time.

In 1985, an MIS savior arrived in the form of one of Great Britain's largest corporations, Batsa, Inc., the U.S. division of

"London-based B.A.T. Industries PLC. Batus, which took over Marshall Field in 1985, "changed us from a maintenance to a development shop," Longridge said. At the time, BOLTS was running on an IBM 4341; the shop was upgraded to a 4381.

With the shop under control and management interested in new projects, Longridge began the most ambitious of the company's new undertakings — consolidation of the company's 20 warehouses into one. The job is expected to be completed in July.

The consolidated warehouse is 70 feet high and dark inside except for the head-



Breuners'
John C. Longridge

lights of the roving elevator cranes that run at seven miles per hour up and down the building's narrow aisles. The cranes brandish long-range bar-code scanners to locate furniture from distances of up to seven feet.

Longridge said the rack space used for the cranes alone would account for 20 football fields with half a field left over. Also in the building are two refinishing centers and a maintenance facility.

The "high-bay" warehouse is run by a Hewlett-Packard Co. HP 9000 on Dispatcher software developed by Logisticon, Inc. in Santa Clara, Calif. The system

manages both the storage and retrieval of material and the resources needed to carry out the tasks.

Purchase order information is downloaded from the 4381 to the HP 9000 with the aid of a protocol converter that changes EBCDIC to ASCII.

"In one transaction, the system checks stock, makes a reservation, gets credit approval and figures the next available delivery date based on the buyer's ZIP code," Longridge said. The warehouse, which is the major part of a \$16 million investment in customer service, puts Breuners "absolutely ahead" of the competition, Longridge said, and will contribute to "astronomical savings."

He estimated that the centralization project will eliminate the need not only for warehouse workers but also for some clerical workers. He said it will also contribute to substantially less damage and pilferage.

Furniture assembly

"The system is old technology, but it's never been put together for a furniture application," Longridge said. He said the scanner idea was borrowed from manufacturing applications and that the high-bay approach is used in Europe.

Although Longridge is on Breuners' management team, he said it took him years to get funding for the automated warehouse.

Since being acquired by Batus, the company is also planning to install personal computer-based cashiers. Longridge said using PCs will eliminate dual processing. The company's current IBM 3683 point-of-sale systems cannot interface with information in the CICS: Information must be entered twice. "We need the ability to get into CICS. With a PC, we can have one single entry point for information," he said.

Other MIS projects include an as-yet unspecified relational data base system at to be acquired the beginning of next year with a fourth-generation language. Longridge estimated this will cut his programming staff in half. Also, Bresnans will be switching from dedicated analog data lines to digital lines in each of its 20 stores and phasing out half-inch tape to install cassette-based storage systems.



Attach A Fast ASCII Printer To Your IBM 3174!

Plug InterLynx/3287 directly into any IBM Type "A" Comm port and run a reliable high speed ASCII printer.

The advantage of the performance and price benefits of Hewlett-Packard, Xerox, Epson, Okidata, NEC, Panasonic, Dataproducts, Printronix and IBM Proprinter and Quietwriter printers.

- Connects directly to IBM 3174/3174 controllers.

- **Plug and Play**—No host software changes required.

- Run popular laser printers—including HP LaserJet II.

- New High Throughput—Up to 40 ppm/1500 lpm

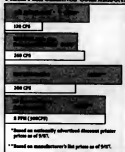
- Great new features, including FOUR user-selectable printer initialization strings.

- Serial and parallel printer interfaces built-in.
- Available with and without front panel.
- Easy to configure from front panel or serial terminal.
- New extended 24-month warranty!
- Knowledgeable technical support team.
- Computerized Help Desk—24-hour electronic mail support for Interlux customers.
- Over 10,000 units installed worldwide.

Need Any More Curing?
Call us today at (213) 520-7126

We'll send complete information and the name of your Local Data representative. In Canada, call (800) 267-1821. In UK, call (0753) 76537.

PRICE/PERFORMANCE COMPARISON



2771 Plaza Del Amo, Torrance, CA 90503
213-520-7226 FAX 213-628-0386
TELEX 182588

Leaflets products are available and supported in the United States and Argentina, Australia, Austria, Belgium, Canada, Colombia, Denmark, Finland, France, Federal Republic of Germany, Hong Kong, Iceland, Republic of Ireland, Italy, Korea, Mexico, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, Taiwan, Thailand, United Kingdom, and Venezuela. Call for the distributor for your area.

Unisys banks on passbook printer

BLUE BELL, Pa. — A printer designed to sit at bank teller windows is now available from Unisys Corp. for \$2,300.

The EF 4565 Passbook and Document Printer is a low-end extension of Unisys's EF 4560 line of printers. Other printers in the series contain daily journals and ticket dispensing devices.

The top of the four-printer line has a character recognition device that can read the last line of a passbook and provide information on the account. In this new version, a user must key in that information. The EF 4565 is priced \$3,600 less than the top-of-the-line model.

The printer is a nine-wire dot matrix printer that prints 10 to 16 char./in. at 100 to 160 char./sec. in either draft or near-letter-quality mode.

The device has two RS-232C ports for two Unisys B 25 workstations or two EF 7000 financial terminals.

Now available on OS/2.



The problem with most 4GLs is they're finished before you are.

And where does that leave you?

With the final, tricky ten percent of your application yet to write, and no 4GL left to write it with. Sound familiar?

If so, try INFORMIX[®]4GL.

Never again will you have to switch to C or COBOL to truly customize your application. Instead, INFORMIX-4GL provides an all encompassing syntax for every aspect of your application building.

So once you're programming in INFORMIX-4GL, you never have to leave it. And considering all it can do, you may never want to.

Now for instance, you can write in just ten to twenty pages of 4GL code, applica-

tions that would take hundreds of pages with C.

That's because INFORMIX-4GL was designed from the start to be an application building language. It's built around the full implementation of ANSI Standard SQL. And features Custom Screen Generation, Custom Menu Building, a built-in Report Writer and Windows.

What's more, INFORMIX-4GL works with UNIX[™], VMS[™], MS[™]-DOS and Networked DOS operating systems. And, of course, it's compatible with INFORMIX-SQL—our popular, proven DBMS. So files you build with one, you can access with the other.

For more information and our free booklet, "A 20-Minute Guide to INFORMIX-4GL," call 415/322-4100.

Or write Informix Software, 4100 Bohannon Drive, Menlo Park, CA 94025.

And start taking your applications to even greater heights.



INFORMIX

The RDBMS for people who know better.[™]

INFORMIX is a registered trademark of Informix Software, Inc. Other names identified by TM are trademarks and/or trademarks of their respective manufacturers. © 1987, Informix Software, Inc.

NEW PRODUCTS

Processors

A 16- or 32-bit single-board microprocessor that employs Motorola, Inc.'s MC68000 running at 8, 10 or 12 MHz has been announced by Swisscomp, Inc.

The M68K512MB has 32K bytes of operating system in firmware, 512K bytes of user random-access memory, a socketed area with 96K bytes of erasable programmable read-only memory, two RS-232C interfaces with selectable data transfer rates of up to 38K bit/sec. for input and data display, three 16-bit parallel ports, a real-time clock, 40 I/O lines and

four 62- or 64-pin connectors for future expansion.

The M68K512MB costs \$999.
Swisscomp, 5312 56th St., Tampa,
Fla. 33610. 813-828-0906.

Graphics systems

A video frame-grabber option has been announced by Chromatica, Inc. for use with its Le Mans and Baja Colorgraphic display systems.

Features of the CX Frame Grabber include real-time video frame grabbing at 30 frame/sec. and software-selectable mapping configuration and resolution.

The frame grabber allows users to integrate computer-generated graphics with real-time video images. It digitizes signals from video cameras, optical disk players, videocassette recorders and other RS-170A devices and stores them in either bit-map memory or bit-map overlay.

Prices start at approximately \$9,000.
Chromatics, 2558 Mountain Industrial
Blvd., Tucker, Ga. 30084. 404-493-
7000.

Data storage

An external optical drive subsystem said to add 2.4G bytes of storage to micro and minicomputers and to put 1.2G bytes of memory on-line full time has been announced by Information Storage, Inc.

The 525GBX2 houses two 1.2G-byte write-once read-many 5¼-in. optical drives on a single controller.

Information Storage also announced the 525GB, an optical disk subsystem for internal mounting. It offers 1.2G bytes of storage.

The 525GBX2 costs \$9,488. The 525GB costs \$5,968.

Information Storage, 2768 Janitell
Road, Colorado Springs, Colo. 80906.
303-579-0460.

Terminals

An ASCII display terminal has been announced by Memorex Telex, a division of Memorex Corp.

The **Memorex Telex 0220 ANSI Display Station** is a plug-compatible replacement for Digital Equipment Corp.'s VT220, VT100 and VT52 display terminals. According to the vendor, the product can be used in both DEC and IBM environments.

Features include a flat 14-in. nonglare screen, an 80- or 132-char. by 25-line screen, a tilt-and-swivel base and a choice of green, amber or white phosphors. Along with the ASCII character set, the Telex 0220 displays the full DEC supplemental and special graphics character sets as well as any VT220-compatible down-line-loadable character sets.

The 0220 costs \$545.
Memorex Telex, 611 S. Milpitas Blvd.,
Milpitas, Calif. 95035. 408-957-1000.

Printers/Plotters

An internal interface card that enables Hewlett-Packard Co.'s Laserjet Series II printer to be used with IBM System/36 or 38 minicomputers has been announced by I-O Corp.

The I-O 8300HP LaserCard connects through the LaserJet Series II's internal I/O port. It features Auto DP Mode, which the vendor said allows automatic selection of the appropriate font and page orientation to allow printing of 80-, 132- or 198-col. data processing output.

According to the vendor, a Laserjet with a Laercard appears to the IBM host as plug-compatible with an IBM 5219 printer.

The I-O 8200HP LaserCard costs \$995.
I-O, 2256 S. 3600 West, Salt Lake City, Utah 84119. 801-973-6767.

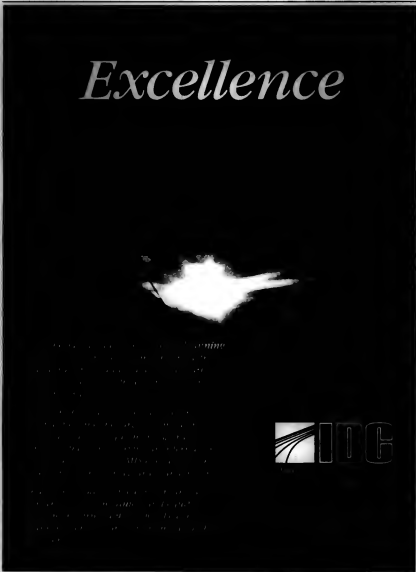
Decision Data Computer Corp. has announced the letter-quality 6815 Band Printer, designed for use with IBM System/36 and 38 minicomputers.

According to Decision Data, the 132-col. printer offers full IBM 4245 emulation. It is said to print 1,500 line/min at 48 char./sec.

Other features include a straight paper path, flat tractor feeds and powerized paper pullers, a wide carriage throat, a five-position adjustable output tray, a digital display, self-diagnostic capabilities with error conditions shown on a 32-char. display and five LED indicators.

The 6815 accepts continuous feed, multipart and oversized forms up to 17½ in. wide. Fully formed character sets for up to 30 fonts, including foreign languages, are available.

The 6815 Band Printer is priced at \$24,500.
Decision Data, 400 Horsham Road,
Horsham, Pa. 19044. 215-674-3300.



JUST

A PASSION FOR EXCELLENCE

Castrol believes in continuously bettering itself for the ultimate in service to its customers. If you are an owner, operator or fleet manager, you know your equipment is your business. Castrol's products are designed to protect your investment and keep your equipment running smoothly.

Castrol's products are designed to protect your investment and keep your equipment running smoothly. Castrol's products are designed to protect your investment and keep your equipment running smoothly. Castrol's products are designed to protect your investment and keep your equipment running smoothly.

Castrol's products are designed to protect your investment and keep your equipment running smoothly. Castrol's products are designed to protect your investment and keep your equipment running smoothly. Castrol's products are designed to protect your investment and keep your equipment running smoothly.

Castrol's products are designed to protect your investment and keep your equipment running smoothly. Castrol's products are designed to protect your investment and keep your equipment running smoothly. Castrol's products are designed to protect your investment and keep your equipment running smoothly.

NEC INTRODUCES DESKTOP POWER TO GO.



Introducing the PowerMate™ Portable. It's a whole new way to take work home. Or to a client. Or to a conference room. Or just about anywhere.

The 286-based PowerMate Portable gives you all the functions (and all the power) of a full-size desktop computer—in a compact, transportable package. With internal, AT-compatible expansion slots. An optional internal modem. Processing speeds of 8/10 MHz. A 20 MB or 40 MB hard disk (40 ms). EGA resolution on a backlit LCD display. And a whole lot more.

All of which means you get portability—so you can work where you want, when you want—without sacrificing features or power.

The PowerMate Portable. It's the quick pick-me-up for productivity. To learn more, call 1-800-343-4419.

Take it to the limit.

NEC

For more information, and the name of the authorized NECIS dealer nearest you, call 1-800-343-4419 (in MA, 617-264-8635). In Canada, call 1-800-387-4313. Or write: NEC Information Systems, Dept. 1610, 1414 Massachusetts Ave., Boxborough, MA 01719.

C&C Computers and Communications

SPOTLIGHT

▼
IBM PC
COMPATIBLES



The IBM family tree has spawned a dense forest of compatibles. Now, competition is so thick that the originator is being crowded by imitators of all sizes.



The big idea behind the PC system you can't outgrow.

It's so simple: a building block approach that makes upgrading our new computers a snap. Literally. It's the PC design for the '80s. And the '90s. Because it protects your PC investment against obsolescence. Wyse calls it Modular Systems Architecture.*

We've incorporated all computing functions—including the heart of the computer, the CPU and its microprocessor—on plug-in boards. So as your computing needs grow, you can upgrade our general purpose 8 megahertz model to a high performance 12.5 megahertz 286 machine—or even a 16 megahertz 386. When more powerful microprocessors are available, you'll even be able to boost the performance of our top-of-the-line WYSEpc 386.



The WYSEpc 386, one of the most powerful PCs in the business, with exceptional memory speed as well as processing speed.

Introducing SystemWyse.™ Our new PCs are themselves building blocks. Of SystemWyse—a comprehensive system for creating solutions. They link effortlessly with our terminals, monitors, and expansion boards in applications from desktop publishing and engineering workstations, to 16-station multi-user systems.



It's this easy to upgrade the CPU—and boost the power—of a SystemWyse PC.

SystemWyse uses industry standard operating systems, such as MS-DOS, OS/2, and Xenix. And it's backed by the company that produces more terminals than anyone but IBM, with over one million sold.

The big idea behind SystemWyse, above all, is to adapt more readily than any other PC system to change. Because when survival belongs to the fittest, the only true survivors are those who remain fittest, longest. Call for more information. **1-800-GET-WYSE**

WYSE

We make it better, or we just don't make it.

Wyse is a registered trademark of Wyse Technology. SystemWyse, WYSEpc 386, and Modular Systems Architecture are trademarks of Wyse Technology. Other trademarks include: MS-DOS, Xenix, MicroVAX 386, 286, IBM International Business Machines, Xenix, Xenix/386.

Get your own — You deserve it!

FIRST NAME										LAST NAME									
TITLE																			
COMPANY																			
ADDRESS																			
CITY										STATE					ZIP				

Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD

Get your own — You deserve it!

FIRST NAME										LAST NAME									
TITLE										COMPANY									
ADDRESS										CITY									
STATE										ZIP									

Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD

- 348815-2

548845-2

Get your own — You deserve it!

FIRST NAME										LAST NAME									
TITLE										COMPANY									
ADDRESS										CITY									
STATE										ZIP									

Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD

4688 J. Neurosci., September 24, 2008 • 28(39):4682–4692



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 55 NEPTUNE, NJ 07754

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

CIRCULATION DEPARTMENT
P.O. Box 1565
Neptune, NJ 07754-9916



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 55 NEPTUNE, NJ 07754

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

CIRCULATION DEPARTMENT
P.O. Box 1565
Neptune, NJ 07754-9916



INSIDE

Product Face-Off

There are more than flip-of-the-coin differences between the Compaq Deskpro 386/20 and the IBM Personal System/2 Model 80. Page S4.

Insider Trading

While Japanese PCs hold only a small share of the U.S. market, all U.S.-made personal computers carry some component that is marked "Made in Japan." Page S5.

Upward Mobility

Corporations are turning to portables and laptops for more jobs of all kinds. Page S6.

Center Stage

Increased user sophistication has given micros greater visibility within organizations and drawn management attention to certain control issues. Page S8.

Ask the Vendor

Vendors respond to questions about address conflicts, MS-DOS 3.2 upgrades for laptops and networking of machines from different vendors. Page S9.

Product Charts

A listing of the top 15 IBM PC-compatible makers and the products that put them in those positions. Page S9.

A detailed guide to laptop and portable PCs. Page S10.

SENIOR EDITOR

Joanne Kelleher

ASSOCIATE EDITOR

Deborah Fickling

DESIGN EDITOR

Marjorie Magowan

RESEARCHER

Sally Cusack

ASSISTANT RESEARCHER

Bonnie MacNeil

Cover illustration:

Rob Colvin

Copyright 1988 by CW Publishing Inc. All rights reserved. Reproduction of material appearing in Computerworld Spotlight is forbidden without written permission. Send all requests to News Services, CW Publishing Inc., Box 9171, 375 Cochran Road, Framingham, MA 01901-9171.

Organizations are estimating how much life is left in the 286 and deciding if 386 performance is worth the higher price

EDGING TOWARD POWER MACHINES

BY ALAN RADDING



MICHAEL MCGILLIEM

Small skirmishes are taking place in organizations throughout the country over which chip technology to choose for IBM and compatible computers. Microcomputer managers are staving off anxious users — who want a machine built around the Intel Corp. 80386 chip simply because it is the latest advance in microcomputer technology — while wrestling with the classic quandary of performance vs. cost.

"I've had two or three user requests for 386 machines, which we've beaten back," says Chuck Davis, who oversees 300 microcomputers as vice-president of strategic technology for Chicago-based Computech Systems, Inc. Davis says he discouraged these requests because they were prompted not by need but by the lure of owning the newest and the best.

Jim Wilt, office systems analyst at Sundstrand Corp., an aviation components manufacturer based in Rockford, Ill., says he is also standing fast and refusing to jump into 80386 commitments. "For us, the issue is a simple one: cost vs. speed," says Wilt, who manages roughly 350 personal computers. Cost, he adds, is winning out. "We're buying only 80286 machines for the average desk."

Not all the decisions being made favor the status quo, however. Addison-Wesley Publishing Co. in Reading, Mass., recently implemented a new computer purchasing strategy that puts the organization squarely in the 80386 world. "We are recommending [to user departments] that the IBM Personal System/2 be the new standard," says Robert Petersen, manager of user services.

A dedicated IBM shop, Addison-Wesley has approximately 500 Personal Computer XT and ATs and is warning user departments that, following IBM's lead, it will eventually phase out

support for the PC. Departments can buy PS/2s based on older chip technology, but Petersen advises against it. "I'm telling them that if they are going to want high-powered tools, they are going to have to go beyond the PS/2 Model 30 or face having to upgrade within two years," he says.

Two sides to every issue

Just as people can cite the Bible to support opposing sides of the same issue, computer professionals can find evidence in computer history that will justify either staying with current technology or buying the latest improvement.

Since computing needs always catch up to, and eventually surpass, the performance of existing equipment, a company can justify buying the most computing power it can afford; sooner or later, it will need it. It is also true, however, that prices always come down, and as long as a company's productivity isn't suffering, waiting until the last possible moment can also make sense. When a company finally needs 386 power, it will likely be able to buy it at a lower cost.

The issue governing most organizations is whether the need for 386 performance is pressing enough to justify paying the premium this equipment commands.

Right now, the retail price of an 80386 16-MHz machine from a major manufacturer with 2M bytes of random-access memory and a

Building is a Boston-based author specializing in business and technology.

Edging

FROM PRECEDING PAGE

40M-byte hard disk is about \$4,500 but is discounted to less than \$4,000. An 80286 10-MHz machine from the same maker with 640K bytes of RAM and a 40M-byte hard disk goes for \$2,500 but is discounted to \$2,000.

In the IBM PS/2 family, the Model 80, an 80386 16-MHz machine with 1M byte of RAM and a 44M-byte hard disk, lists for about \$7,000, while the PS/2 Model 60, an 80286 10-MHz machine with 1M byte of RAM and a 44M-byte hard disk, lists for about \$5,300.

Strippped-down model

While it is possible to buy a generic 80386 16-MHz machine with 512K bytes of RAM and a 20M-byte hard disk for less than \$2,000, that price, like those quoted above, does not take into account other expenditures that may be required to take full advantage of 386 technology.

These extras include a larger hard disk drive, a high-resolution color graphics monitor and possibly a laser printer to capitalize on presentation-quality graphics. Fully configured, the average price of an 80386-based system actually ranges somewhere between \$6,000 and \$10,000.

Furthermore, many analysts predict that, before long, yet another round of price cuts will occur in the 286 chip class.

Lee Doyle, a senior PC analyst at International Data Corp. (IDC) in Framingham, Mass., for example, cautions his projections for continued dominance of 286-class PCs through this year with predictions for a price drop to around \$1,500.

Money down the drain

Whether the current and projected differentials between 286 and 386 machines are sufficient to discourage organizations from plugging ahead with 386 purchases depends on more than budgetary constraints. One issue is whether companies believe 286 machines will hold their value for a reasonable depreciation interval.

Stephen Barry, a senior manager at Price Waterhouse in Washington, D.C., says most of the large financial institutions he consults with do not. "A lot of the people I work with are looking at the 386 machines more and more," he says. "They think that buying a 286 machine is like throwing money down a drain."

Bill Kirwin, program director of personal computing policies and strategies at the Gartner Group, Inc. in Stamford, Conn., says he is inclined to agree. While Kirwin expects the 286 machine will remain a significant market factor until 1991, he says the smart money is going with the 386.

"As a long-term investment, the 386 chip is a better buy... [but] it depends on your threshold of pain," he says. If an organization is prepared to spend \$5,000 anyway, it might as well make the extra investment for the 386 machine.

"You could argue that the 8086 [at less than \$1,000] is a great buy, but if you have to replace the machine in two or three years rather than six years, you eliminate any savings," Kirwin says. The organization, he adds, has to look at the full cost of the machine throughout its entire life cycle.

Still, the question remains whether there is a pressing need for companies to buy into the 386 chip now. To begin answering that question, you have to understand the basic differences between the two chip types.

The chip difference

To most users, computer power means either processing speed or the ability to address more memory at the machine level. A chip like the 386, which handles a 32-bit data word, is faster than the 286, which handles a 16-bit data word, because each cycle of the 386 can process more information and address more memory on the hardware level. The fastest commercial 386 chips currently operate at 20 MHz, while 286 chips offer a top-end speed of 12 MHz.

The speed difference between the two chips can best be seen in how each handles mathe-

matic operations. To multiply or divide, the 286 must run more cycles of processing to accomplish the same result, because it must break the data into smaller pieces and perform more operations.

Just how important this difference is depends to a large degree on both the type and size of applications that a machine would be expected to handle.

Some contend that for the average PC user, the practical difference between the chips is small. This is because the extra processing capabilities of the

386 chip are not apparent when working with character-based business applications, such as simple spreadsheets or word processing.

"If you're doing spreadsheets, word processing or simple data bases, you don't have an overwhelming need" for the faster speed, says Marc Sokol,

Under those circumstances, the extra speed of the 386 technology is not a luxury but a true productivity gain.

Furthermore, he says, for applications that require a lot of processing, such as graphics, the newer chip provides a distinct advantage. In particular, banks are adopting the 386 technol-

The Gartner Group's Kirwin, on the other hand, says momentum is inexorably moving to the 386 machine and that, while current products do not offer all the functionality of OS/2, they still offer compelling reasons to look at 386 machines.

Steven Roth, vice-president of application systems development at Marine Midland Bank, Inc., a technical analysis group in New York, says he agrees that the promise of the 386 chip makes the new machines worth a look.

"The 386 is the first real step for PC technology in addressing serious number-crunching needs," Roth says, noting that the real payoff for the new machines is just beginning to appear. "We'll really be able to answer the 386 question when OS/2 comes out."

OS/2 without 386

Although most people see the two as inextricably entwined, IBM and Microsoft's OS/2 does not require — nor is it a requirement for — the 386 chip. OS/2 will run on the 286, even though it is expected to perform best on 386 machines.

In addition, 386 machines can perform without OS/2. The operating system will give 386-based machines mainframe-type computing capabilities, such as distributed processing, concurrency, in which intelligent peripherals can assume some CPU functions. However, other operating systems, such as Unix, will also provide such abilities in the future.

In fact, despite OSI's comment about OS/2 determining the 386's popularity, he is looking at the potential of the 386 chip for alternatives to OS/2. Roth says he is more interested in the possibility of running Unix than OS/2. "The 386 is the first machine to make Unix viable for the PC. All the capabilities of OS/2 are available in Unix and Xenix," he says.

The fate of Unix on the microcomputer should become apparent very quickly, according to some. "There is an opportunity for Unix, but if it is going to make it into the PC market, it will have to do it within the next year," says Patricia Seybold, president of the Seybold Office Computing Group in Boston.

OS/2 began shipping early this year. By February, there were 79 applications programs registered, according to Seybold. Those who are waiting to see 386-based applications can expect about 1,000 OS/2 application programs by the end of the year. But while that may sound like a lot, there are more than 20,000 Microsoft MS-DOS applications in existence.

In the meantime, there are some applications that, even in MS-DOS, would provide a powerful incentive for shifting to the 386 platform. Julian Horwich,

The win column

Producers in the IBM PC and compatible market with largest U.S. share increases between 1986 and 1987



executive vice-president at Realis, Inc., a Chicago-based software company.

Undoubtedly, a large Lotus Development Corp. spreadsheet will recalculate significantly faster with a 386 machine; other than that, however, 1-2-3 with a 386-based machine will not be faster than 1-2-3 on a 286, Sokol says.

ogy, according to Barry, because they are making increased use of sophisticated graphics.

Is it for five graphics

Bankers Trust Co. in New York is already in the process of moving to the 386 architecture, says Leslie Fiering, assistant vice-president of advanced technology.

Fiering's interest in the 386 chip is encouraged both by the chip's speed and the growing number of applications designed to run on it, particularly Microsoft's Windows 386 and Amos Software's Paradox 386. She says she is also attracted by the graphics opportunities presented by 386 technology.

For instance, Microsoft's Excel for the PC has powerful graphics, which, combined with the spreadsheet, provide near-desktop publishing quality for forms, a large part of a bank's operation, Fiering explains.

Most analysts agree, however, that the first batch of 386-based software products do not really take advantage of the new technology's best capabilities. Where the analysts part is on whether 386-based products offer enough to warrant a new machine purchase.

IDC's Doyle says that as many as 30% of today's users may need that go beyond the capabilities of the PC. Within two years, he says, those users will have to move to a 386 machine or upgrade their existing machines with 386 technology.

Doyle also maintains, however, that the difference between the two chips is, in most situations, more theoretical than practical. What is missing, he says, is the applications software required to harness 386 power.

The loss column

Producers in the IBM PC and compatible market with largest U.S. share decreases between 1986 and 1987



matic processing. To multiply or divide, the 286 must run more cycles of processing to accomplish the same result, because it must break the data into smaller pieces and perform more operations.

Just how important this difference is depends to a large degree on both the type and size of applications that a machine would be expected to handle.

Some contend that for the average PC user, the practical difference between the chips is small. This is because the extra processing capabilities of the

spreadsheet may be true for basic spreadsheet use. Price Waterhouse's Barry counters, but if a user able in some heavy-duty calculation, the equation changes.

Price Waterhouse, for example, is putting 386-based machines into its operations for stand-alone spreadsheet applications. "We wouldn't have gotten them if we were just doing simple addition and subtraction," Barry says, "but we use a lot of logic functions that take time, and we use a lot of the math co-

executive director of the Chicago Association of Microcomputer Professionals and manager of office technology at a large Midwest company with several thousand micros, says that in addition to graphics, there is a need for 386 software in the desktop publishing area. "Desktop publishing is a pain at 10 MHz," he says.

Change on demand

Virginia Talamo, microcomputer technology manager at Coopers & Lybrand in New York, says she expects her organization to eventually switch to 386-based machines but that it will not be in 1988. Coopers & Lybrand currently has 700 PCs and expects to have 1,000 by the end of the year. Talamo says she will recommend the changeover to the new chip when users demand software applications that require 386 technology.

Exactly what software applications those might be is not clear yet, if new word processing software for the 386 were to evolve into full-featured text processing, "that would put a glint in my eye," Talamo says. But, she adds, she wouldn't leap at it because her users currently have a mainframe-based central word processing and document-control data base, and she could risk losing compatibility and connectivity if she switches.

Because Talamo has not seen much software yet, she says she has opted to wait. "I'm waiting to see how soon the actual software arrives and how necessary it is for my users," she says.

At this point, most microcomputer managers are approaching the question on an individual basis, Horwicz says. "You have to look at the individuals' needs. If they need power and have the cash, then go with the 386. If they don't need the power or the budget is an issue, go with the 286 machine," he says.

A prime example of special-case purchasing is Boston's Spaulding Rehabilitation Hospital. The hospital just bought its first 386-based computer, according to Davis Sweet, manager of information services at Spaulding.

Sweet says he bought the 386 to address a particular problem, a very large data base. In that case, he says, speed issues override cost. "We had been doing this particular application on a 286 machine, but the difference in speed is incredible. With some operations, it is over three times faster," he says.

Still, the hospital primarily runs 8088 and 286 machines. Sweet says the 386 machine's cost would have dissuaded him from purchasing it if it hadn't been that top executives favored — and actually organized — the idea. "We would have saved about \$1,000, all told, if we bought a 286," he notes.

Incremental strategies

Many companies are approaching the chip migration issue incrementally, either choosing key applications and key users for early purchases of 386 PCs or upgrading through board-level additions.

Seybold says some of the first logical fits for 386 technology are in graphics applications, for IBM's Micro Channel architecture or an alternative bus or when a

YOU HAVE to look at the individuals' needs. If they need power and have the cash, then go with the 386. If they don't need the power or the budget is an issue, go with the 286 machine."

JULIAN HORWICZ

CHICAGO ASSOCIATION OF MICROCOMPUTER PROFESSIONALS

mainframe connection through IBM's Systems Network Architecture gateway is required.

Although Wit's policy at Sunstrand is to stick with the 286 technology, his group uses one 386 machine for a computer-aided design application, which has clearly benefited from the 386's 20-MHz

speed and greater processing power.

At his Midwest firm, Horwicz uses a 386 machine to test 386 software. While at one time he discouraged requests for the new technology as a matter of policy, his attitude is changing now that he sees software run on it. But Horwicz says he would not stop users from buying an

8088-based machine "if their needs are modest and they will be comfortable with the machine for a few years."

Although Computech's Davis discourages most users from buying 386 machines, he purchased several of them himself to use as high-speed servers. This, he says, is an application for which the machine's advanced speed provides an immediate advantage.

Not cheap, but cheaper

The add-on board strategy is not necessarily a cheap solution, but it is certainly less expensive than buying a whole new machine; it constitutes a \$2,000 vs. a \$5,000 investment. Still, many people shy away from the board solution.

The add-on board strategy "is like

Now, Through Leasametric, Discover AST Premium/286™. A New Standard of Performance and Price.



What gives the AST Premium/286 personal computer its name? For starters, it operates 50 percent faster than an 8 MHz PC AT™ and maintains full compatibility with standard PC and AT-based enhancement cards. Which means that when you buy the fastest personal computer on the market, you also provide for an expandable and upgradeable future, easily accommodating the next generation of IBM enhancements.

- 6, 8, or 10 MHz Operation
- 0 Wait-State Memory Access

- MS-DOS™ and Basic™ Software Included
- Up to 1 MB Factory-Installed RAM, Expandable to 13 MB
- 40 MB Hard Disk and EGA Video Adapter Standard on Some Models
- Serial and Parallel Ports Standard on All Models
- 1.2 MB Floppy Drive
- 101-Key Keyboard
- FCC Approved
- One-Year Warranty
- Seven Expansion Slots
- Rent, Lease or Buy

AST
RESEARCH INC.

* As measured by the System Utilities™ Version 1.0 Utility. AST and AST logo registered and AST Premium/286 trademarks AST Research, Inc. IBM registered trademark International Business Machines Corp. MS-DOS and Basic registered trademarks Microsoft Corp.

LEASAMETRIC

Data Communications Division

Northwest:
(800) 343-7368
(415) 574-5797

Southwest:
(800) 638-7854
(885) 706-2669

Central:
(800) 323-4825
(312) 595-2700

Northwest:
(800) 221-0246
(201) 825-9000

Southwest:
(800) 241-5041
(404) 925-7980

stuffing a hot automotive engine into a cheap compact car," the Gartner Group's Kirwin says. "You go fast off the line, but you will run into other problems." You will still be stuck with old disk drives and an old bus, he says, and if you don't have the right architecture, you'll limit your new CPU's capabilities.

Spaulding's Sweet agrees. "I've been leery of upgrade boards. It's a lot like hot-rodding. I believe you should buy something designed to do the entire job," he says.

Marine Midland's Roth offers some examples to back up these concerns. "A couple of traders looked at [upgrade boards] but ran into some compatibility problems," he says. Typically, accessories, extra memory and peripherals may not be compatible with the accelerator board. "I don't see it paying off," Roth concludes.

Think or trade?

Coopers & Lybrand's Talmo says she prefers to buy new equipment if the need arises and pass the old equipment along to users in the organization who can use it.

Sundstrand's Witt agrees. "I don't get any comfort from accelerator boards," he says. "I don't believe in supercharged old machines."

Not all micro-computer professionals agree. Harwick says he has a 386 accelerator board in his IBM Personal Computer AT. "It's a trade-off of time and effort vs. dollars," he says. Computech's Devia says he will also approve the use of accelerator boards under some conditions.

"I'll say yes, provided the user isn't constrained by some other factor, like bus speed," he notes.

Price Waterhouse's Barry says that in general, firms will use add-on boards when they want to do the same thing as before, only faster. But, he adds, "if you're looking at adding a new application, most organizations will go with a new PC."

Ironically, Barry's own company just bought new machines rather than upgrading, not because of any new applications but because it needed the additional machines. As a side benefit, the company's processing-intensive spreadsheets can gain from the 386 technology.

Eventually, user organizations may be forced to move on to 386 machines, either by their own work requirements or by those of vendors. Despite prom-

ises to support current technology, most vendors are moving to the 386 chip. Compaq Computer Corp. markets only one 8088-based machine, and consultants agree that both Compaq and IBM will likely drop the 8088, 8086 and 286 chips altogether in favor of the 386.

In the meantime, however, there are good reasons, beyond price, for not jumping into a purchase decision. Technology based on the 386 chip promises — in addition to making the PC faster and giving it more memory — to expand its capabilities. Unfortunately, 386-chip bus architecture lacks a standard.

As a strategic consideration, the 386 bus is one of the biggest drawbacks. Bankers Trust's Fiering says, "Five companies are showing me their bus, but there is no industry standard for the 32-bit bus," she notes, referring to IBM, Compaq, AST Research, Inc., Intel and PC's Limited. In the short term, the bus is not a problem because there are no applications to run on it, but Fiering predicts it will become one, when users become concerned with bus compatibility issues.

Most users are ignoring the bus question until they learn more about potential applications.

"We're thinking about [the alternative bus], but it has no impact on our decisions," Sundstrand's Witt says. "When a certain bus shows an advantage for particular applications, then we'll make [consideration of] that part of our decision."

Tough questions

Coopers & Lybrand's Talmo suggests that very few companies are committing themselves to an alternative bus strategy. "I don't see a lot of companies jumping to the Micro Channel. That's why they're buying low-end [286 chip-based] PS/2 machines," she notes.

And the 386 bus is not the only question mark looming right now. The 20-MHz 386 chip is about to be superseded by a 25-MHz version. Intel says it has a 80486 chip under development. And users may soon have to contend with a Motorola, Inc. 32-bit reduced instruction set computing chip offering 80386 emulation.

If you thought the choice between a 286 and 386 chip was complicated, just wait. Things could get a lot more interesting. ■

PRODUCT FACE-OFF Hot-rodding on top-line 386s

BY DAVID PHILLIPS



While there are hundreds of personal computers in the marketplace to choose from, when it comes to picking the top-of-the-line for power, the field narrows down to a few, with Compaq Computer Corp.'s Deskpro 386/20 and IBM's Personal System/2 Model 80 heading the list.

Even when choosing between these two computers, however, there are numerous levels and options that can become confusing. For example, the "20" in the Deskpro 386/20 means it runs on Intel Corp.'s 20-MHz microprocessor, making it the fastest machine in Compaq's line. Other Deskpro 386 machines run at 16 MHz.

For its part, the PS/2 Model 80 has submodels, two that run at 16 MHz (Models 80-041 and 80-071) and two that run at 20 MHz (Models 80-111 and 80-311). This discussion will be confined to the PS/2 Model 80-111, which is a peer of the Deskpro 386/20 and will be referred to generically as the PS/2 Model 80 throughout.

Both machines are extremely fast and, to the naked eye, about equal in speed. When a user loads a program, it is on the screen in a blink. Running a Lotus Development Corp. 1-2-3 spreadsheet with 9,450 formulas and hitting the CALC key (my own benchmark) caused the red "wait" mode indicator to flash on for about a second with both machines. Huge data bases are not in half the time it takes on other computers.

Are they for everyone?

"So what?" a user may ask. "Does everyone really need that speed and power? And what are the differences between the machines?"

It's true that not everyone needs that power. Just as you wouldn't buy a race car to drive to the supermarket, top-of-the-line PCs are not appropriate for every use. The PS/2 Model 80 and Deskpro 386/20 are designed for power users — people who run departmental applications or even some previously mainframe, corporate-wide applications on their PCs. The machines are also excellent dedicated file servers on local-area networks.

One business line manager at

a large bank says the main reason he opted for Compaq's 20-MHz machine was because he was constantly fine-tuning an important departmental application that was executed in 1-3-3 with a lengthy macro.

He says he used to go out to lunch and come back, and the macro would still be running on his IBM Personal Computer XT. Migrating to a 386 machine at 16 MHz helped substantially, but the extra jump up to the Deskpro 386/20 gave him an additional 25% savings in time.

Compatibility

One area in which the Deskpro 386/20 holds an edge over the PS/2 Model 80 is in its compatibility

and carries additional screen drivers for displays, which Compaq supports.

Compatibility with the future is a tougher subject to tackle. Since Compaq has not officially seen a copy of IBM's OS/2 Extended Edition, the company says it cannot comment on whether it will work on a Deskpro 386/20.

While both computers support a long list of options, one particularly interesting option is the shared hard drive.

The Deskpro offers the initial drive at 60M, 130M and 300M bytes. The PS/2 Model 80 series offers hard drives at 44M, 70M, 115M and 314M bytes, but the 20-MHz models start at 115M bytes.

Since many users collect as much data as will fit onto their hard drive, managers may want to confine that space to something reasonable, such as 40M to 60M bytes. Such intentions are thwarted on the 20-MHz PS/2s. On the other hand, since these machines are designed for the power user and for LANs, such a large minimum storage threshold may not be a real problem.

Purchase costs

Because there is a difference between what these two machines offer as standard and optional — for example, the display and mouse port are included in the Model 80 as standard but are options in the Deskpro — we're comparing apples and oranges when trying to differentiate between these machines' prices.

According to two New York retailers that sell both machines, a stripped Deskpro — with a 130M-byte hard drive and no options — costs \$1,000 to \$1,500 less than the PS/2 Model 80, but the Model 80 comes with more standard features.

If users try to even the machines out according to equipment, the Deskpro still comes out cheaper, but the gap is narrowing. However, discounting, as well as the aforementioned scavenging, can change this equation.

From a technical perspective, both computers offer similar speed, power and storage capabilities at a comparable price, and both are well suited for power user and LAN server duty.

However, the differences in compatibility with the past and possibly with the future, as well as in maintenance costs, deny managers the luxury of just flipping a coin: The choice demands a careful and honest appraisal of a company's current environment and future needs. ■



Bankers Trust's Fiering



Computech's Devia

Phillips is president of David Phillips Associates, Inc., a West Hempstead, N.Y., management consulting firm specializing in information centers and end-user computing strategies.

Can Japan annex the desktop PC?

BY GLENN RIFKIN

Don Bartoli likes Epson personal computers, but when he put out a request for proposals in 1987 for an acquisition of up to 400 PCs, he felt compelled to go with an American vendor.

Bartoli, a financial analyst in charge of PCs at Dallas-based Southmark Management Corp., was not swayed by nationalistic feelings or anti-Japanese sentiment. His decision was a pragmatic one based on the fact that Epson Corp. submitted a proposal designating Sears Roebuck & Co. as its front-end reseller.

Since Southmark is a reseller company with 400 apartment complexes in 36 states, Bartoli felt that Sears simply did not offer the field support to adequately cover the network he wanted to establish. He eventually purchased NCR Corp. PCs. "I didn't go with Epson because I wanted to deal directly with the vendor," Bartoli says.

Not much luck yet. Bartoli's reasoning is illustrative of corporate America's tenuous relationship with Japanese PC makers. It helps explain why Japanese vendors have had so much difficulty gaining a foothold in the lucrative U.S. personal computer market.

According to market research firm International Data Corp. (IDC), six Japanese firms selling PCs under their own names accounted for less than 8% of the \$20 billion U.S. IBM-compatible market in 1987.

And though IDC analyst Aaron Goldberg predicts that figure will rise to 11% in 1988, it remains clear that the Japanese are, as was once anticipated, taking the market by storm. Epson, the most successful Japanese vendor in the U.S., accounted for only 3.1% of the market last year, with 181,000 units shipped.

Japan's relatively small impact on the PC market is more than a bit surprising to many seasoned observers. The prevailing theory had been that as soon as the technology settled down and became more of a commodity market, Japanese vendors would take advantage of their ability to diminish costs, add features and improve quality and style, producing the same kind of success with PCs that their compatriots had enjoyed with small cars, VCRs and cameras.

There is only one area in which the Japanese have made

visible and significant progress: The laptop PC market, which is slowly but surely gaining momentum, is the only PC category now dominated by the Japanese. Regardless of brand name, virtually every laptop machine sold in the U.S. is built by a Japanese company. IBM's PC Convertible is an exception but a fairly negligible one, since it has done poorly in the market.

Indeed, the machine that launched the laptop market, the Tandy Corp. Model 100, is made by Kyocera Corp. in Japan. Toshiba Corp., the leading Japanese laptop PC maker, assembles five of its six models in the U.S. (the T1000 is made in Japan), but all its components come from Japan. Computerworld has also learned that Hitachi Ltd. will start selling a laptop in the U.S. in the second or third quarter of this year.

"No compelling strength"

"Outside the laptop market, the Japanese have shown no compelling strength," says Douglas Cayne, vice-president and director of personal computing at the Gartner Group, Inc. "They are nowhere near the presence they could be."

"If the Japanese equipment was noticeably cheaper or better, they would do well here," adds Kenneth Boonworth, president of International Resource Development Corp. in Stamford, Conn. "By and large, they've had very little success. One expects them to do better."

But there is more than one way to skin a computer, and the Japanese have decided to start from the inside out with the U.S. brand name. Although the brand names may not be Japanese, the insides—random-access memory chips, monitors, add-on boards, disk drives—are of virtually all major PCs, including IBM's, come in part from Japan.

Private labeling agreements also abound, with U.S. companies selling Japanese PCs under their own names. Unisys Corp. and ITT Corp. have entered both private-label Mitsubishi Corp. PCs.

"The Japanese have made lots of progress in the PC market that we don't see," says Richard Shaffer, editor of the "Technology Computer Letter." "If you sell the RAM and peripheral chips and the monitors, does it matter if you don't sell the CPU and have your name on the machine?"

Japan's growing influence, in fact, has alarmed such industry

giants as IBM, which reportedly offered its own proprietary chip technology to leading rival Digital Equipment Corp. and others in order to thwart Japan's progress in the U.S.

Still, it is becoming apparent that the big Japanese players would like to own a piece of the corporate PC market under their own names and, furthermore, that they now see possibilities in that direction that didn't exist just a few years ago.

Already, companies like Epson, NEC Corp. and Toshiba

One, as a reason for that company's increased success. Epson currently builds 30% of its PCs there and intends to increase that percentage. "Having that presence in the U.S. gives us the ability to reach the market more quickly and to build relationships with resellers in which they know we will deliver," he says.

Although Lapinski concedes that the IBMs, Tandys and Compaqs will be tough — if not impossible — to catch, "there's a continued need to serve small to medium-size users," he says.

Made in Japan

U.S. shipment patterns of major Japanese producers of IBM-compatible personal computers, 1986 to 1987



INFORMATION PROVIDED BY INTERNATIONAL DATA CORP., CM CHART

have shown enough progress to significantly increase U.S. production, and others are joining the fray. Matsushita Electric Industrial Co., which sells its Panasonic line in the U.S., decided in December to start producing PCs here.

To come in the front door under its own umbrella, however, a Japanese PC maker must first pass a tough test. Without a solid, coordinated U.S.-based headquarters, a Japanese PC maker simply will not be able to provide the kind of marketing and support services a successful vendor requires.

"From a profitability standpoint, the Japanese disposition to build products for everyone else may certainly be viewed as an intelligent strategy to keep the bottom line black," says Charles P. Lecht, an IDG News Service foreign correspondent based in Tokyo. "At the prices PCs sell for, servicing a foreign community that cannot read Japanese would require too much investment to make it worthwhile."

Combine strategies

On the other hand, Steven Lapinski, vice-president of marketing for computers and printers at Epson America, Inc., says Japanese companies must integrate manufacturing, marketing and engineering closely and effectively in order to be a major player in the U.S.

Lapinski cites Epson's manufacturing facility in Portland,

OR., as a reason for that company's increased success.

One, as a reason for that company's increased success. Epson currently builds 30% of its PCs there and intends to increase that percentage. "Having that presence in the U.S. gives us the ability to reach the market more quickly and to build relationships with resellers in which they know we will deliver," he says.

Although Lapinski concedes that the IBMs, Tandys and Compaqs will be tough — if not impossible — to catch, "there's a continued need to serve small to medium-size users," he says.

One, as a reason for that company's increased success. Epson currently builds 30% of its PCs there and intends to increase that percentage. "Having that presence in the U.S. gives us the ability to reach the market more quickly and to build relationships with resellers in which they know we will deliver," he says.

One, as a reason for that company's increased success. Epson currently builds 30% of its PCs there and intends to increase that percentage. "Having that presence in the U.S. gives us the ability to reach the market more quickly and to build relationships with resellers in which they know we will deliver," he says.

One, as a reason for that company's increased success. Epson currently builds 30% of its PCs there and intends to increase that percentage. "Having that presence in the U.S. gives us the ability to reach the market more quickly and to build relationships with resellers in which they know we will deliver," he says.

One, as a reason for that company's increased success. Epson currently builds 30% of its PCs there and intends to increase that percentage. "Having that presence in the U.S. gives us the ability to reach the market more quickly and to build relationships with resellers in which they know we will deliver," he says.

One, as a reason for that company's increased success. Epson currently builds 30% of its PCs there and intends to increase that percentage. "Having that presence in the U.S. gives us the ability to reach the market more quickly and to build relationships with resellers in which they know we will deliver," he says.

One, as a reason for that company's increased success. Epson currently builds 30% of its PCs there and intends to increase that percentage. "Having that presence in the U.S. gives us the ability to reach the market more quickly and to build relationships with resellers in which they know we will deliver," he says.

One, as a reason for that company's increased success. Epson currently builds 30% of its PCs there and intends to increase that percentage. "Having that presence in the U.S. gives us the ability to reach the market more quickly and to build relationships with resellers in which they know we will deliver," he says.

One, as a reason for that company's increased success. Epson currently builds 30% of its PCs there and intends to increase that percentage. "Having that presence in the U.S. gives us the ability to reach the market more quickly and to build relationships with resellers in which they know we will deliver," he says.

One, as a reason for that company's increased success. Epson currently builds 30% of its PCs there and intends to increase that percentage. "Having that presence in the U.S. gives us the ability to reach the market more quickly and to build relationships with resellers in which they know we will deliver," he says.

One, as a reason for that company's increased success. Epson currently builds 30% of its PCs there and intends to increase that percentage. "Having that presence in the U.S. gives us the ability to reach the market more quickly and to build relationships with resellers in which they know we will deliver," he says.

NEC is out to compete head-to-head with the big boys. It sells only Intel Corp. 80286 and 80386-based PCs, putting it in competition with IBM and Compaq Computer Corp. In order to do that and build beyond the 113,000 machines it sold in 1987, NEC is focusing its attention on attractive programs for dealers and resellers and pushing the image of quality that Japan's NEC insists on.

Grand insists that Japanese vendors have not encountered anti-Japanese biases in selling their machines. "Having a 'Made in the U.S.' label makes that less of a problem," he claims.

IDC's Goldberg is not so sure. In large corporations, especially those with strong unions, he says, Japanese vendors are not welcome because, even if the machine is U.S.-made, the profits eventually head back to Tokyo.

Stumbling block

For the desktop players, the path to success is already blocked by another obstacle: IBM's Personal System/2 models and the port of the proprietary Micro Channel architecture.

The Gartner Group's Cayne says he believes IBM's and Microsoft Corp.'s OS/2 could be a problem for Japanese vendors. "OS/2 makes people even more nervous about standards," Cayne says. "It's a lot easier for the Japanese vendors to sell printers."

A bigger concern is gaining credibility with MIS shops in private accounts. The issue of buying clones remains a major one in corporate environments.

In the long run, the issue will not likely be decided by the machine's origin. As consultant Shaffer puts it, "Does anyone care if a Gamma copier comes from Japan? No. All the customer wants is a product that meets his needs."

DL/1 for the PCI

Excellent development or training environment
Advanced debug/trace facility
Support for BATCH and CICS
Support for EXEC DL1 and CALL CBLTDL1
Identical to mainframe: download and run

Supports:

- IBM & DOS/VS programs
- All database calls
- All command codes
- Secondary indexes
- Spooling facilities
- Backward SSA's
- Relational SSA's

Interfaces for:

- Micro Focus COBOL
- Real/COBOL
- MRP COBOL
- Microsoft COBOL
- Digital Research PL/I

Per Cost:

- 1 to 5 - US \$450.00
- 10 to 24 - US \$425.00
- 25 to 40 - US \$400.00
- 50 to 80 - US \$390.00

Phone (416) 841-0734

Utilities Included:

- Unload
- Reload
- Interactive query
- Real time tracing
- Mainframe PSB & DSD conversion to PC ACB
- ACB generation

Requirements:

- PC, XT, AT, PS/2 or compatible
- Microprocessor or color monitor
- 512K product reserves 140K
- Hard disk drive

Interfaces with:

- Real/Real/OS
- Triangle Software CICS/PC
- SofPacSoft Inc.
- Watson Ave.
- Aurora, Ontario
- CANADA L4G 1E2

Portables: A technology whose time has come

BY G. BERTON LATAMORE

Mobility is becoming a sought-after characteristic in corporate personal computers. Sales departments and traveling executives were the first to latch onto portable and laptop computers and are still among the heaviest users, but organizations are also finding many other applications for portable computers.

Salespeople are the primary beneficiaries of portable computers at the AAL Association for Lutharians (AAL), a national fraternal benefit society based in Appleton, Wis. Insurance sales representatives at the society are seldom seen without Data General Corp. Data General One portable computers, even though they

must shoulder the cost of the equipment.

Despite the fact that purchase of the computers is entirely voluntary, Jim Bork, director of new ventures at the organization, estimates that 1,800 sales representatives out of a total force of 2,000 have opted to invest in them as well as companion Hewlett-Packard Co. 2225P ink-jet printers.

"Of course, we get a large discount for volume purchases from Data General, which we pass along. And we offer very favorable financing arrangements," Bork says. Just the same, he adds, the fact that so many salespeople decide to take the step strikes him as a testimony to the machines' effectiveness.

Not only do laptops and portables simplify routine tasks by giving sales repre-

sentatives the means to use tools such as a custom-written prospect file system, Bork says, but they also help in the sales process itself. "We do financial-need analyses and illustrations of our products that we print out and leave with the prospective member as part of our sales process," he says. "When the computer comes back with a recommendation, the prospective member tends to believe it more than if the recommendation comes from the salesperson."

The AAL is also testing the use of an electronic insurance application form. "Conceptually, you would expect this to be the first application for portables," Bork says. "But as a practical matter, it is a little hard to pull off. To get the real benefit, you need to get into direct transmission of applications to the mainframe. We don't have the electronic link set up yet, but we do have the logic captured."

The program of making portables available to salespeople started in 1986, but the organization had actually been considering since a move since 1983. Until the DG model came along, however, none seemed to meet all of the AAL's criteria, which included IBM compatibility, an 80- by 25-pixel screen that could be read easily from a variety of angles, 512K bytes of random-access memory, two disk drives and an internal modem with a speed of at least 1,200 bit/sec.

Of these, the display was the most critical factor, according to Bork. The sales force needed a screen that at least three people — the salesperson, the client and the client's spouse — could read simultaneously in normal indoor light.

Driven to portables

Screen legibility is also a critical issue at Atlantic Richfield Co. (Arco) in Los Angeles, where most users are managers trying to keep up with office responsibilities while traveling. "Mainly, it was first- and second-level managers who drove the company into portables," says Chris Broome, senior technical consultant at the company. "They wanted something they could use to get their electronic mail when they were on the road. We were using dumb terminals, but when the portables came out, they were smaller, and they had computing power."

Broome estimates that Arco has several hundred portables, although, he says, it is difficult to get an exact figure because the machines are treated as commodities and bought by individual departments rather than through central purchasing.

"In differing numbers, we have IBM PC Convertibles, Toshiba 1100s, Phoenix, Toshiba 3100s," he says, "and we're just starting to get into Toshiba 1300s and Gerd 1520s."

The high-end Toshiba America, Inc. T3100s are for people who need hard disks. Right now, that means mainly engineers who use the portables to run test calculations in the field. But, as Broome observes, hard-disk support is becoming a requirement in many areas.

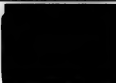
"We're starting to find that as we put



Executive Assistant. Standalone PC; professional graph using Lotus® 1-2-3® data.



Regional Sales Manager. Departmental mini using data from PC.



National Sales Manager. PC off mainframe; data uploaded from mini.



Corporate Graphics Artist. Created using Editor at graphics workstation.



Vice President of Manufacturing. Departmental mini.



Financial Manager. Remote terminal off mainframe; downloaded ASCII file.



AAL's Bork

A single graphics package can make everybody in your company look good. Especially you.

Now there's one business graphics package for all your people and all your hardware. With the same commands in every environment. And file sharing capabilities so data can move freely throughout your company.

It's called Impressionist.™



Impressionist puts brilliant color graphics at the fingertips of everyone in your company. Whether they're a novice, an intermediate user, or an expert. On a micro, mini or mainframe.

All your people learn a single set of commands and menus, no matter where Impressionist is running. So instead of supporting many individual graphics packages, you minimize your company's investment in software, training and support.

Best of all, data from your host computer can be shared throughout your company.

And Impressionist is the only graphics package to effectively combine comprehensive graphics features with a sophisticated editor and a built-in chartbook. It can even access data from ASCII, DIF, IFFS/Plus™, IFFS Personal™ and SYLK files, including Lotus® 1-2-3®. So Impressionist can't not be shared by more people, it does more too.

To find out more about the one graphics package for everyone, call Chris White at 1-800-638-6038. (In Texas and Canada call 512-346-4980.)

Impressionist
© ERIKCOM

All above graphs created using Impressionist. Impressionist runs on Digital's VMS, Unix VMS and MSX files. Integrated with Digital's ALL-01 Impressionist, IFFS/Plus and IFFS Personal are trademarks of ERIKCOM Systems Corporation.

real business applications on these machines, we really need the hard disks," he says. "The programs take up a considerable amount of room, let alone the data."

Arco has started giving portables to its field representatives to use while visiting individual service stations. "They need battery power and hard disks, and that's why we bought the Toshiba 1200s and Grids. They are two approaches to the same technology," he says. "We hope to focus on one or the other soon."

Ironically, sharp screen display may be a drawback for this application. "We're concerned that we might have a problem with station managers or owners looking over the field rep's shoulder and reading sales data from other Arco stations off the screen," Broome says. "The reps will have to be careful about positioning their computers before turning them on."

"We're starting to think we should automatically put in a laptop the way we used to automatically put in a printer as part of every new desktop configuration we install in the office," Broome continues. "The Toshiba 1000's street price is only about \$600 — the same cost as the small dot-matrix printers we often use at individual desks. So why not just automatically include one?"

Price, as well as durability, is what drew Standard Oil Co. in Cleveland to portables. In May 1987, the firm installed Tandy Corp. TRS-80 Model 100s and 102s in its more than 1,000 service stations.

Although the Model 100s and 102s rank among the lightest portables on the market, Standard Oil was never interested in trans-portability. The attraction was price — the machines cost little more than \$300 each — and durability.

"We're talking about a service station environment that is definitely hostile," says Deloitte Haskins & Matsumoto.

Ralph Rocco, manager of retail automation. "The computers can get dropped, attendants spill Coke and coffee on them, there may be problems with power supplies. We have more than 1,000 units out there, so we need something durable and backed by a good national service organization." From Standard Oil's view, PC compatibility and a fancy screen would be distracting. The company took out the models' read-only memory-based generic programs and replaced them with software created by an employee.

While the number of computers in the program is stable, the scope of their use is expanding rapidly. "We started with one application, and now that it works so well, management is constantly asking us to do more," Rocco says. "We've downloaded more than 50 program enhancements to the stations."

Even high-end laptops are not enough for some people, however. The Big Eight accounting firms, for example, need both portability and real computing power. Portability is important because these companies' accountants often work in clients' offices rather than their own, and they need to take computers with them.

The answer for Arthur Andersen & Co., Price Waterhouse and Deloitte Haskins & Sells is Compaq Computer Corp.

WE DEVELOP accounting systems, financial models . . . and data base information systems, so we need portables with the power to do all these things."

JON MATSUO
DELOITTE HASKINS & SELLS

machines. "We have Compaq Portable 386s, Portable 3s and Portable 286s," says Jon Matsuo, systems consulting manager at Deloitte Haskins.

The worldwide accounting firm has two sides to its business: systems development, which Matsuo heads up, and traditional accounting and auditing for major corporations. Both sides equip consul-

ants and accountants with Compaqs.

"We build systems for clients and conduct audits of our clients," he says. "Just about everything we do is of a very high level and very sophisticated. Otherwise, the clients can do it themselves. We develop accounting systems, financial models and sophisticated financial modeling packages and data base information sys-

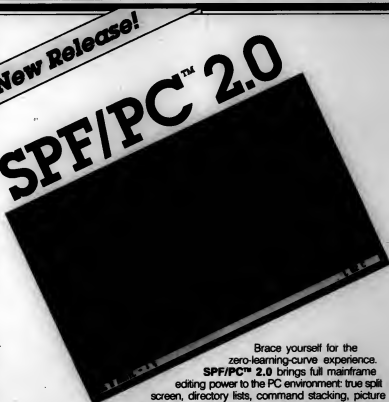
tems, so we need portables with the power to do all these things."

What these applications demand, Matsuo says, is a full PC that employees can carry with them. Laptops just do not deliver enough speed and storage capacity, mainly because their design philosophy is to pack as much as possible into a small package of predetermined size and weight. Compaq, on the other hand, starts with a full IBM-compatible PC, then trims it as much as possible without losing any capabilities.

In fact, Matsuo says, even executives who do not travel have switched from PCs to Compaq laptops. "Almost all our new computer purchases are Compaq portables," Matsuo says. "I don't think we buy any desktop machines anymore."

New Release!

SPF/PC™ 2.0



Brace yourself for the zero-learning-curve experience. **SPF/PC™ 2.0** brings full mainframe editing power to the PC environment: true spill screen, directory lists, command stacking, picture strings, 43-line-EGA and 50-line-VGA support, binary file editing, the latest mainframe commands and much more.

Need proof? Call or write for a free demonstration diskette.

SPF/PC™, so much like the real thing, you'll forget you're editing on a PC.



Command Technology Corporation

1900 Mountain Blvd., Oakland, CA 94611 (415) 339-3530 Telex: 509330

PCs gain maturity

BY SALLY CUSACK

Personal computer users are now a force to be reckoned with in many organizations as they push for dispersal of information, create new applications and shove their desktop machines onto center stage.

In the retailing field, one generally recognized as lagging in technological implementation, there are clear signs that PCs are beginning to play a more pivotal role. Value Katros, MIS PC coordinator at Wm. Filene's Sons Co., a Boston-based retail chain, attributes that change to the creative energy of PC users.

Until recently, Katros says, PCs were not a driving element in corporate decision making. "In our industry," he says, "senior management is just becoming aware of the value of the end user being in control of data."

Hitting the stores
Filene's, which operates 31 stores, is moving gradually from centralized to decentralized

computing as more funds are made available for end-user support. Originally, PCs were brought into the company by insurance department employees interested in running Lotus Development Corp. spreadsheets. Now, 100 to 150 PCs — IBM Personal Computer ATs, Personal System/2 Models 30, 50 and 80, Compaq Computer Corp. portables and IBM 4860 AT controllers — are installed throughout all Filene's locations, and more purchases are planned.

The store is currently installing an executive information system — a front-end system capable of turning mainframe information into graphics and exception reports for chief executive officers and analysts.

Filene's is also using PC technology to revive the old-fashioned concept of service. It is developing local-area network-based systems for customer service and personalized shopping assistance. The increased level of PC acquisitions at Filene's is, Katros says, largely attributable to the success of user-

developed applications.

User sophistication is also changing the way things are done at Hartford Insurance Group in Hartford, Conn. According to Michael Fontana, product evaluation group leader, today's user is "sophisticated in not only the application but the hardware that powers it."

Many of these users, Fontana says, perform much of their own maintenance. Respecting that know-how, Fontana regularly includes them in product evaluations.

Jeff Lee, senior marketing manager at Focus Research Systems in West Hartford, Conn., agrees that user sophistication is on the rise and says that as it continues to grow, users will demand more direct data access from MIS.

Price to pay

With power and visibility, however, come regulations and controls. Now that organizations have begun to realize the scope of the PC phenomenon, they are also thinking about standards and cost containment.

Organizations are pursuing

better control through a number of measures, Lee says, including appointing microcomputer managers and maintaining strict inventory counts.

"Purchasing departments are now looking at cost. A 'more for less' philosophy is emerging," Lee says. "This also results in more individualized cost accounting and workstation configuration, which means we will see more clones, more compatibles and more mixtures such as Korean keyboards with the IBM machines."

At Dravo Engineers, a division of Dravo Corp. in Pittsburgh, efficiency has meant mixing Apple Computer, Inc. with IBM machines. In the near future, the company plans to further drift away from a pure Blue shop toward IBM compatibles, according to Sandra LaPietra, manager of computer services.

In its 400-engineering division in the Pittsburgh area, Dravo currently mixes IBM PC XTs, Compaq 386s and Apple Macintoshes. Sixty-five XTs and Compaqs equipped with Intel Corp. 80387 math coprocessor chips are used

for engineering applications, and 85 Macintoshes are used for electronic mail, document creation, spreadsheet analysis and data base functions. According to LaPietra, Compaq 386 Model 20s are taking the places that might have gone to PS/2s.

"The Compaq 386 Model 20 is more powerful at a lower cost. We can't afford to wait for IBM and OS/2," she says.

Combining resources

At Hartford Insurance, where there are currently about 2,000 PC users working on a mixture of IBM, Wang Laboratories, Inc. and ITT Corp. machines, allocation is decided on the basis of business need.

For employees whose normal work loads do not cost-justify a PC installation, Hartford has created Shared Centers — walk-in facilities housing PCs, plotters and laser printers.

At Filene's, control is maintained by a requirement that all departmental requests for PCs must be approved by Katros' division. The purpose, Katros explains, is not only cost containment but standardization. Filene's is trying to keep the variety of hardware it purchases to a minimum, with the eventual goal being a standardized move to the PS/2. ■



Filene's Katros

Pick.



Choosing a laser printer?

Easy.

Pick one equipped with Adobe® PostScript® software. PostScript is a page description language that comes as resident software in leading laser printers. And it's the first and only standard adopted by virtually every major company in the computer industry.

Which means printers equipped with PostScript software work with any computers you now have. Or plan to get. Including IBM® PCs, Macintoshes®, minicomputers, and mainframes.

So you get complete vendor independence. And total flexibility.

Let's say you have a report, proposal or newsletter that needs printing. Just use any printer in the office that is equipped with PostScript software. From low to high resolution. Even color. It's your choice.

And only printers equipped with PostScript software can handle the most powerful electronic publishing and graphics software tools in the business.

Like the Adobe Type Library. With hundreds of typefaces to expand your range of communication.

Adobe Illustrator® software. A program that lets anyone draw like a pro. From the simplest to the most complex art.

And Display PostScript™ system software that brings the power of PostScript to any PC or workstation display.

For details on any Adobe product, call 800-29-ADOBE. In Alaska and Canada, call (415) 962-2100.

And see how being picky actually increases your choices.



ASK THE VENDOR

The following questions were solicited from users and conveyed to the vendors for responses.



I recently purchased a Tandy 4000/386. When I used my high-resolution graphics display board, I found an address conflict at memory location C6000:000. When and how does Tandy plan to resolve this issue?

Gary Cherg
Manager of Office Electronics
Reliance Electronic
Industrial Co.
Greenville, S.C.

TANDY CORP. The BIOS Version 1.03.01 did have an address conflict at memory address C6000:000. An upgraded BIOS Version 1.03.02 is necessary and is available by special order from your local Radio Shack store, a Radio Shack Computer Center or a participating dealer.

The Toshiba T1000 laptop has Microsoft Corp.'s MS-DOS 2.1 built-in read-only memory. Why didn't Toshiba install MS-DOS 3.2? Any plans to upgrade?

Jeff Tanner

Controller
Texas Instruments, Inc.
Dallas

TOSHIBA AMERICA, INC. The primary enhancements of MS-DOS 3.2 are in three areas. Two of these are 3.2's ability to deal with hard disks and networks, neither of which is likely to be a factor on the T1000. The third is its ability to function with 3½-in. diskettes, a feature Toshiba has added to its MS-DOS 3.2.1.

MS-DOS 3.2.1 is smaller than MS-DOS 3.2. In the T1000, the ROM disk holds 256K bytes, not enough to fit MS-DOS 3.2. MS-DOS 3.2 is available on the T1000 as an option.

As an IBM-compatible microcomputer supplier, what is Zenith's response to the Micro Channel as the IBM Personal System/2s?

Jeff Riewke
Director of Advanced
Information Technologies
Whirlpool Corp.
Benton Harbor, Mich.

ZENITH DATA SYSTEMS. The real issue of PS/2 designs is the Mi-

cro Channel bus, which is incompatible with IBM Personal Computer XT and AT add-on cards. Also, despite advertised claims, the bus can slow the PC in key applications. PCs are purchased to solve a problem, so performance and features are key. PS/2s from IBM or other companies will need to solve the PS/2 products to compete with faster, less expensive AT compatibles.

We have one NEC Powermate 286, one NEC Powermate 386 and two other 80286 machines from Wyse Technology operating as stand-alone computer-aided design stations. Is it possible to network these machines together?

Ron Rand
Lead Design Draftsman
Teleco, Inc.
Spokane, Wash.

NEC INFORMATION SYSTEMS, INC. The NECIS personal computer hardware platforms support all networking products that would run on an IBM Personal Computer AT machine. Networking systems will not diminish the speed on the 386. Degradation will occur, however, as the number of nodes on a network is increased.

The top 15 IBM PC compatibles

IBM

(Contact local sales office)
Personal System/2 Model 25
Based on an Intel Corp. 8086 processor with speed of 8 MHz. Optional Intel 8087 math coprocessor. Offers 512K or 640K bytes with one or two 740K-byte 3½-in. diskette drive configurations. Includes one half-size and one 8-in. expansion slot.

PS/2 Model 30

Based on the 8086 processor with speed of 8 MHz. Optional 8087 coprocessor. Standard 640K-byte random-access memory, with two 740K-byte 3½-in. diskette drives or one 740K-byte diskette drive and a 20M-byte hard disk. Includes three expansion slots.

PS/2 Model 50

An Intel 80286 machine with speed of 10 MHz. Optional Intel 80287 math coprocessor. Offers 1M-byte RAM expandable to 7M bytes via adapter cards. Standard configuration is 1.44M-byte 3½-in. diskette drive with 20M-byte fixed disk. Includes three expansion slots.

PS/2 Model 60

Same processor as the Model 50,

with 1M-byte RAM expandable to 15M bytes via adapter cards. Standard configurations include one 1.44M-byte diskette drive with 44M- or 70M-byte fixed disk and seven expansion slots.

PS/2 Model 80

Based on Intel 80386 microprocessor, runs at 16 or 20 MHz. Optional Intel 80387 coprocessor. Offers 1M- or 2M-byte RAM on system boards expandable to 16M bytes. Standard configurations include one 1.44M-byte 3½-in. diskette drive and 44M-, 70M-, 115M- or 314M-byte fixed disk. Also offers seven expansion slots.

Tandy Corp. (817) 390-3700

Tandy 4000
Based on an Intel Corp. 80386 microprocessor operating at 16 MHz, with a 3½-in. 1.44M-byte floppy disk drive and four single-in-line memory modules in the base configuration of 1M byte. Includes dedicated 32-bit expansion slot and two open half-height front drives. Optional 20M- and 40M-byte hard drives.

Continued on page S12

And choose.



NBI, Inc.
Model 908



OMS PS®
800 II, 810



Linotype Company
Linotron® 150, 350, 500



Texas Instruments
OmniLaser® 2108



Texas Instruments
OmniLaser® 2108, 2115



The Laser Connection
PS Jet/PS Jet™



Dataproducts Corp.
L2R™ 2665



Qume Corporation
Scripter™



Digital Equipment Corp.
PrintServer 400 ScriptPrinter™



AST
Turbo Laser®/PS



IBM 4216-020
Personal Pageprinter™



Varityper
VT-600



Apple Computer Inc.
LaserWriter® Ix, IxTX



Quadram
Quadwriter® PS



Apple-Genwert
1400PS™



General Computer
Business LaserPrinter Plus™



Wang
LCS™



NEC Information Systems
SilentWriter® LC-890



Diconix
Diji® LPS



Apollo Computer Inc.
DomainLaser 26™



OMS PS® 2400,
OM5® JetScript

Portables and laptops

[illegible]

[†]Enhanced Graphics Adapter [‡]Transistor-Transistor Logic [§]Random-access memory

The companies included in this chart responded to a recent telephone survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, this is designated NP (not provided). When a question does not apply to a vendor's product, this is designated NA (not applicable). Further product information is available from the vendors.

COMPANY	PRODUCT	MICROPROCESSOR	CLOCK SPEED (MHz)	WEIGHT	FOOTPRINT (IN INCHES)	SCREEN DIMENSIONS	SCREEN RESOLUTION (PIXELS)	SCREEN TYPE	BATTERY POWER	NUMBER OF KEYS	MEMORY, RAM, STANDARD/ MAXIMUM (MBYTES)	STORAGE, STANDARD/ MAXIMUM	TYPE OF MONITOR PORTS	INCLUDES SERIAL/ PARALLEL PORTS	NUMBER OF EXPANSION SLOTS	PRICE
International Systems Marketing, Inc. (908) 979-1813	Express 286 VGA	80386	20 or 30	20 lbs	6.0 x 17.5 x 3.0	10 in. diagonal	640 x 480	RGB monitor	None	24	640KB	1.2MB 386c300 floppy drive, 20MB hard disk (optional)	VGA, TTL	Both	Eight	\$8,000
Ivy Microcomputer Corp. (617) 853-8914	Ivy AT A/C	80386	10	30 lbs	8.4 x 17.5 x 3.0	9 in.	640 x 200	CRT	No	34	640K/1M	One 24-in. floppy drive 20MB, 40MB or 80MB 386c hard disk	None	Both	Eight	From \$2,000
	Ivy 386 A/C	80386	20	35 lbs	8.4 x 17.5 x 3.0	9 in.	640 x 200	CRT	No	38	1024KB	One 24-in. floppy drive 20MB, 40MB or 80MB 386c hard disk	None	Both	Eight	From \$2,500
	Ivy XT	80386	30	30 lbs	8.4 x 17.5 x 3.0	9 in.	640 x 200	CRT	No	38	2048K/640K	One 24-in. floppy drive 20MB, 40MB or 80MB 386c hard disk	None	Both	Eight	From \$1,000
Keegan Corp. 20000 Keegan	Keegan 286	80386	4.77 or 5	30 lbs	20 x 11.5 x 6.0	8.4 x 9	640 x 200	Supermarket LCD with dual-channel bus-mounted backlighting	Lead-acid	77	768K	Two 20-in. floppy drives (optional)	EGA, VGA, Standard	Both	Mass	\$8,700
Mini-Mary Business Systems Corp. (203) 644-2748	Executive Laptop	80386, 80387	10 or 20	14.9 lbs	5.0 x 10 x 3.0	7.0 x 5.0	640 x 400	Capacitive	Fixed	60	1MB/128K	1.44MB floppy drive (1.2MB-type hard disk)	EGA	Both	Four	\$1,400-\$1,900
	Ultapack	80386, 80387, 80388	10, 12, 20	17 lbs	9.3 x 13.5 x 9.9	9 x 9	640 x 400	Supermarket LCD touch	None	30	640K/640K/1024K/1.2MB	20MB type floppy drive (1.2MB-type hard disk)	EGA	Both	Six	\$1,500-\$2,500
Radical Microcomputers, Inc. (617) 927-7797	Der-micro 2.0	80386	4.0	20 ounces	3.0 x 6.0 x 0.8	3 x 5.0	30 x 200	Bubble LCD	Four AA, AA alkalies, three push	47	1.0MB/192K	CGI8000 battery-powered keypad	None	Serial	Only for custom assembly board	\$6,000
	Der-micro 1.0	80386	4	10 ounces	3.0 x 6.0 x 0.8	3 x 5.0	30 x 200	Bubble LCD	Four AA alkalies, three push	47 or 57	640KB/192K	CGI8000 battery-powered keypad	None	Serial	Only for custom assembly board	\$1,000
RSC Ross Corporation (RSCAL, Inc.) (313) 560-0000	Multiport 3D	80386 VBC	9.54/17.7	14.3 lbs	3.0 x 13.0 x 12.5	4.3 x 8.1	640 x 350	Supermarket LCD with electric backlight	Fixed	60	640K standard	One 200-1000 byte hard disk, one 720K-type floppy drive	RGB	Both	One	\$3,000
	Multiport EL Model 3	80386 VBC	9.54/17.7	13.5 lbs	3.2 x 13.0 x 12.4	4.3 x 8.1	640 x 350	Supermarket LCD touch electric backlight	Fixed	60	640K standard	Two 20-in. 720K-type floppy drives	RGB	Both	One	\$2,000
	Multiport VBC	80386 VBC	9.54/17.7	11.3 lbs	3.1 x 13.0 x 12.4	4.3 x 8.1	640 x 350	Supermarket LCD	Fixed	50	640K	Two 20-in. 720K-type floppy drives	RGB	Both	One	\$1,100
RSC Information Systems, Inc. (800) 363-4132	Power Mate Portable	80386	9 or 10	20 lbs	15.2 x 10.2 x 6.0	6.75 x 2.50	640 x 350	Bubble LCD	No	60	640K/1.0MB	One 20-in. floppy drive (1.2MB-type hard disk)	RGB	Both	Three	\$6,000
Polymertron Computer Corp. (415) 730-0000	PCC Portable XT	80386	4.7 and 10	20 lbs	9.1 x 10 x 3.4	6 x 7.5	30"	TTL monochrome	None	Same as standard 80386 XT	640K/640K	20MB, 20MB or 40MB-type hard disk (optional)	TTL	Both	Seven	\$2,700-\$3,000
Remedy Engineering Corp. (313) 557-4448	Light 90	80386	10	30 lbs	4.0 x 10.5 x 3.0	9 x 7	640 x 350	Shore backlighting	Fixed	100	640K/1.0MB	20MB-type internal hard drive (1.2MB-type floppy drive)	EGA, VGA	Both	One	\$8,000
Sheng Electronics Corp. (617) 294-0000	PC-4001	V40 (80186 compatible)	7.19	10 lbs	3 x 12.6 x 12.75	5.20 x 4.5	640 x 200	Supermarket LCD	Lead	70	2048K/640K	One 20-in. floppy drive	None	Parallel	Three	\$950
	PC-4002	V40 (80186 compatible)	7.19	10.5 lbs	3 x 12.6 x 12.75	5.20 x 4.5	640 x 200	Supermarket LCD with electric backlight	Lead	80	640K/1.0MB	Two 20-in. floppy disks	10"	Parallel	Three	\$1,700
	PC-45-01	V40 (80186 compatible)	7.19	12.4 lbs	3 x 12.6 x 12.75	5.20 x 4.5	640 x 200	Supermarket LCD with electric backlight	Lead	30	640K/1.0MB	One 20-in. floppy drive 20MB-type hard disk	10"	Parallel	Three	\$1,500
	PC-7000A	80386-2	7.31	17.0 lbs	6.0 x 10.6 x 4.20	5.70 x 4.5	640 x 300	Supermarket LCD with electric backlight	No	84	320K/704K	Two 20-in. floppy drives	10"	Both	Two	\$1,800
	PC-7100	80386-2	7.31	19 lbs	3.0 x 10.6 x 6.20	5.70 x 4.5	640 x 300	Supermarket LCD	No	84	320K/704K	One 20-in. floppy drive 20MB-type hard disk	None	Both	Two	\$2,000
	PC-7200	80386	6.9 or 9	21 lbs	6.0 x 10.6 x 6.20	5.70 x 4.5	640 x 300	Supermarket LCD with electric backlight	No	100	640K/1.0MB	Two 20-in. floppy drives	10"	Both	One	\$2,500
	PC-7301	80386	6.9 or 10	21 lbs	6.0 x 10.6 x 6.20	5.70 x 4.5	640 x 300	LCD supermarket with electric backlight	No	110	640K/1.0MB	One 20-in. floppy drive 20MB-type hard disk	10"	Both	One	\$3,000
Subtel Corp. (703) 700-6616	Subtel Comm Portable	80386, 80387, 80388, 80389, 80390, 80391, 80392, 80393, 80394, 80395, 80396, 80397, 80398, 80399, 80400, 80401, 80402, 80403, 80404, 80405, 80406, 80407, 80408, 80409, 80410, 80411, 80412, 80413, 80414, 80415, 80416, 80417, 80418, 80419, 80420, 80421, 80422, 80423, 80424, 80425, 80426, 80427, 80428, 80429, 80430, 80431, 80432, 80433, 80434, 80435, 80436, 80437, 80438, 80439, 80440, 80441, 80442, 80443, 80444, 80445, 80446, 80447, 80448, 80449, 80450, 80451, 80452, 80453, 80454, 80455, 80456, 80457, 80458, 80459, 80460, 80461, 80462, 80463, 80464, 80465, 80466, 80467, 80468, 80469, 80470, 80471, 80472, 80473, 80474, 80475, 80476, 80477, 80478, 80479, 80480, 80481, 80482, 80483, 80484, 80485, 80486, 80487, 80488, 80489, 80490, 80491, 80492, 80493, 80494, 80495, 80496, 80497, 80498, 80499, 80500, 80501, 80502, 80503, 80504, 80505, 80506, 80507, 80508, 80509, 80510, 80511, 80512, 80513, 80514, 80515, 80516, 80517, 80518, 80519, 80520, 80521, 80522, 80523, 80524, 80525, 80526, 80527, 80528, 80529, 80530, 80531, 80532, 80533, 80534, 80535, 80536, 80537, 80538, 80539, 80540, 80541, 80542, 80543, 80544, 80545, 80546, 80547, 80548, 80549, 80550, 80551, 80552, 80553, 80554, 80555, 80556, 80557, 80558, 80559, 80560, 80561, 80562, 80563, 80564, 80565, 80566, 80567, 80568, 80569, 80570, 80571, 80572, 80573, 80574, 80575, 80576, 80577, 80578, 80579, 80580, 80581, 80582, 80583, 80584, 80585, 80586, 80587, 80588, 80589, 80590, 80591, 80592, 80593, 80594, 80595, 80596, 80597, 80598, 80599, 80600, 80601, 80602, 80603, 80604, 80605, 80606, 80607, 80608, 80609, 80610, 80611, 80612, 80613, 80614, 80615, 80616, 80617, 80618, 80619, 80620, 80621, 80622, 80623, 80624, 80625, 80626, 80627, 80628, 80629, 80630, 80631, 80632, 80633, 80634, 80635, 80636, 80637, 80638, 80639, 80640, 80641, 80642, 80643, 80644, 80645, 80646, 80647, 80648, 80649, 80650, 80651, 80652, 80653, 80654, 80655, 80656, 80657, 80658, 80659, 80660, 80661, 80662, 80663, 80664, 80665, 80666, 80667, 80668, 80669, 80670, 80671, 80672, 80673, 80674, 80675, 80676, 80677, 80678, 80679, 80680, 80681, 80682, 80683, 80684, 80685, 80686, 80687, 80688, 80689, 80690, 80691, 80692, 80693, 80694, 80695, 80696, 80697, 80698, 80699, 80700, 80701, 80702, 80703, 80704, 80705, 80706, 80707, 80708, 80709, 80710, 80711, 80712, 80713, 80714, 80715, 80716, 80717, 80718, 80719, 80720, 80721, 80722, 80723, 80724, 80725, 80726, 80727, 80728, 80729, 80730, 80731, 80732, 80733, 80734, 80735, 80736, 80737, 80738, 80739, 80740, 80741, 80742, 80743, 80744, 80745, 80746, 80747, 80748, 80749, 80750, 80751, 80752, 80753, 80754, 80755, 80756, 80757, 80758, 80759, 80760, 80761, 80762, 80763, 80764, 80765, 80766, 80767, 80768, 80769, 80770, 80771, 80772, 80773, 80774, 80775, 80776, 80777, 80778, 80779, 80780, 80781, 80782, 80783, 80784, 80785, 80786, 80787, 80788, 80789, 80790, 80791, 80792, 80793, 80794, 80795, 80796, 80797, 80798, 80799, 80800, 80801, 80802, 80803, 80804, 80805, 80806, 80807, 80808, 80809, 80810, 80811, 80812, 80813, 80814, 80815, 80816, 80817, 80818, 80819, 80820, 80821, 80822, 80823, 80824, 80825, 80826, 80827, 80828, 80829, 80830, 80831, 80832, 80833, 80834, 80835, 80836, 80837, 80838, 80839, 80840, 80841, 80842, 80843, 80844, 80845, 80846, 80847, 80848, 80849, 80850, 80851, 80852, 80853, 80854, 80855, 80856, 80857, 80858, 80859, 80860, 80861, 80862, 80863, 80864, 80865, 80866, 80867, 80868, 80869, 80870, 80871, 80872, 80873, 80874, 80875, 80876, 80877, 80878, 80879, 80880, 80881, 80882, 80883, 80884, 80885, 80886, 80887, 80888, 80889, 80890, 80891, 80892, 80893, 80894, 80895, 80896, 80897, 80898, 80899, 80900, 80901, 80902, 80903, 80904, 80905, 80906, 80907, 80908, 80909, 80910, 80911, 80912, 80913, 80914, 80915, 80916, 80917, 80918, 80919, 80920, 80921, 80922, 80923, 80924, 80925, 80926, 80927, 80928, 80929, 80930, 80931, 80932, 80933, 80934, 80935, 80936, 80937, 80938, 80939, 80940, 80941, 80942, 80943, 80944, 80945, 80946, 80947, 80948, 80949, 80950, 80951, 80952, 80953, 80954, 80955, 80956, 80957, 80958, 80959, 80960, 80961, 80962, 80963, 80964, 80965, 80966, 80967, 80968, 80969, 80970, 80971, 80972, 80973, 80974, 80975, 80976, 80977, 80978, 80979, 80980, 80981, 80982, 80983, 80984, 80985, 80986, 80987, 80988, 80989, 80990, 80991, 80992, 80993, 80994, 80995, 80996, 80997, 80998, 80999, 81000, 81001, 81002, 81003, 81004, 81005, 81006, 81007, 81008, 81009, 81010, 81011, 81012, 81013, 81014, 81015, 81016, 81017, 81018, 81019, 81020, 81021, 81022, 81023, 81024, 81025, 81026, 81027, 81028, 81029, 81030, 81031, 81032, 81033, 81034, 81035, 81036, 81037, 81038, 81039, 81040, 81041, 81042, 81043, 81044, 81045, 81046, 81047, 81048, 81049, 81050, 81051, 81052, 81053, 81054, 81055, 81056, 81057, 81058, 81059, 81060, 81061, 81062, 81063, 81064, 81065, 81066, 81067, 81068, 81069, 81070, 81071, 81072, 81073, 81074, 81075, 81076, 81077, 81078, 81079, 81080, 81081, 81082, 81083, 81084, 81085, 81086, 81087, 81088, 81089, 81090, 81091, 81092, 81093, 81094, 81095, 81096, 81097, 81098, 81099, 81100, 81101, 81102, 81103, 81104, 81105, 81106, 81107, 81108, 81109, 81110, 81111, 81112, 81113, 81114, 81115, 81116, 81117, 81118, 81119, 81120, 81121, 81122, 81123, 81124, 81125, 81126, 81127, 81128, 81129, 81130, 81131, 81132, 81133, 81134, 81135, 81136, 81137, 81138, 81139, 81140, 81141, 81142, 81143, 81144, 81145, 81146, 81147, 81148, 81149, 81150, 81151, 81152, 81153, 81154, 81155, 81156, 81157, 81158, 81159, 81160, 81161, 81162, 81163, 81164, 81165, 81166, 81167, 81168, 81169, 81170, 81171, 81172, 81173, 81174, 81175, 81176, 81177, 81178, 81179, 81180, 81181, 81182, 81183, 81184, 81185, 81186, 81187, 81188, 81189, 81190, 81191, 81192, 81193, 81194, 81195, 81196, 81197, 81198, 81199, 81200, 81201, 81202, 81203, 81204, 81205, 81206, 81207, 81208, 81209, 81210, 81211, 81212, 81213, 81214, 81215, 81216, 81217, 81218, 81219, 81220, 81221, 81222, 81223, 81224, 81225, 81226, 81227, 81228, 81229, 81230, 81231, 81232, 81233, 81234, 81235, 81236, 81237, 81238, 81239, 81240, 81241, 81242, 81243, 81244, 81245, 81246, 81247, 81248, 81249, 81250, 81251, 81252, 81253, 81254, 81255, 81256, 81257, 81258, 81259, 81260, 81261, 81262, 81263, 81264, 81265, 81266, 81267, 81268, 81269, 81270, 81271, 81272, 81273, 81274, 81275, 81276, 81277, 81278, 81279, 81280, 81281, 81282, 81283, 81284, 81285, 81286, 81287, 81288, 81289, 81290, 81291, 81292, 81293, 81294, 81295, 81296, 81297, 81298, 81299, 81300, 81301, 81302, 81303, 81304, 81305, 81306, 81307, 81308, 81309, 81310, 81311, 81312, 81313, 81314, 81315, 81316, 81317, 81318, 81319, 81320, 81321, 81322, 81323, 81324, 81325, 81326, 81327, 81328, 81329, 81330, 81331, 81332, 81333, 81334, 81335, 81336, 81337, 81338, 81339, 81340, 81341, 81342, 81343, 81344, 81345, 81346, 81347, 81348, 81349, 81350, 81351, 81352, 81353, 81354, 81355, 81356, 81357, 81358, 81359, 81360, 81361, 81362, 81363, 81364, 81365, 81366, 81367, 81368, 81369, 81370, 81371, 81372, 81373, 81374, 81375, 81376, 81377, 81378, 81379, 81380, 81381, 81382, 81383, 81384, 81385, 81386, 81387, 81388, 81389, 81390, 81391, 81392, 81393, 81394, 81395, 81396, 81397, 81398, 81399, 81400, 81401, 81402, 81403, 81404, 81405, 81406, 81407, 81408, 81409, 81410, 81411, 81412, 81413, 81414, 81415, 81416, 81417, 81418, 81419, 81420, 81421, 81422, 81423, 81424, 81425, 81426, 81427, 81428, 81429, 81430, 81431, 81432, 81433, 81434, 81435, 81436, 81437, 81438, 81439, 81440, 81441, 81442, 81443, 81444, 81445, 81446, 81447, 81448, 81449, 81450, 81451, 81452, 81453, 81454, 81455, 81456, 81457, 81458, 81459, 81460, 81461, 81462, 81463, 81464, 81465, 81466, 81467, 81468, 81469, 81470, 81471, 81472, 81473, 81474, 81475, 81476, 81477, 81478, 81479, 81480, 81481, 81482, 81483, 81484, 81485, 81486, 81487, 81488, 81489, 81490, 81491, 81492, 81493, 81494, 81495, 81496, 81497, 81498, 81499, 81500, 81501, 81502, 81503, 81504, 81505, 81506, 81507, 81508, 8150														

COMPANY	PRODUCT	MICROPROCESSOR	CLOCK SPEED (MHz)	WEIGHT	FOOTPRINT (IN INCHES)	SCREEN DIMENSIONS	SCREEN RESOLUTION (IN PIXELS)	SCREEN TYPE	BATTERY POWER	NUMBER OF KEYS	MEMORY: RAM STANDARD / MAXIMUM (IN BYTES)	STORAGE: STANDARD / MAXIMUM	TYPES OF MONITOR PORTS	INCLUDES SERIAL / PARALLEL PORTS	NUMBER OF EXPANSION SLOTS	PRICE
Tadpole America, Inc., Information Systems Division (714) 952-0000	T5100	80886	8 or 10	10 lb	8.3 x 10.3 x 5.3	5.7 x 7.8	640 x 480	Gas plasma	None	82	320Kb	One 384K-byte hard disk, one 30-Mb 5.25-inch floppy (optional)	BGA	Serial	One	\$7,499
	T5200	80886	8 or 12	10.1 lb	8.8 x 10.8 x 5.9	6.7 x 8.3	640 x 480	Gas plasma	None	82	320Kb	One 384K-byte hard disk, one 30-Mb 5.25-inch floppy (optional)	BGA	Serial	Two	\$8,799
	T5100H	80886	8 or 8	10 lb	8.1 x 10.3 x 5.3	5.7 x 7.8	640 x 480	Gas plasma	None	81	640Kb 1.44	One 384K-byte hard disk, one 30-Mb 5.25-inch floppy (optional)	BGA	Serial	One	\$4,099
	T1100	80386	4.77 or 6.5M	11 lb	8.2 x 10.3 x 5.3	4 x 6	640 x 360	Supernova LCD	None	82	130Kb	One 384K-byte hard disk, one 30-Mb 5.25-inch floppy (optional)	BGA	Serial	One	\$2,499
	T1100H	80386	4.77 or 7.3M	10 lb	8.2 x 10.3 x 5.3	4 x 6	640 x 360	Supernova LCD	None	81	640Kb 1.44	One 384K-byte hard disk, one 30-Mb 5.25-inch floppy (optional)	BGA	Serial	One	\$2,099
	T1100	80386	4.77	6.4 lb	8 x 10.2 x 5.3	4 x 6	640 x 360	Supernova LCD	None	81	610Kb 1.2M	One 384K-byte hard disk, one 30-Mb 5.25-inch floppy (optional)	BGA	Serial	None	\$1,199
Trans PC Systems (213) 958-0930	Trans PC 386 LCD Portable Computer	80386	10 (optional), 12 (optional)	21 lb	9.4 x 10.7 x 6.1	6.3 x 8.4	640 x 320	Single-ported LCD backlit	None	82	1,024Kb	One 384K-byte hard disk, one 30M-byte 5 1/4-inch floppy (optional)	BGA	Serial	One	\$2,325
	Trans 386 Portable Computer	80386	10, 20	21 lb	9.3 x 10.3 x 5.7	6.3 x 8.4	640 x 320	CRT	None	84	1,024Kb	One 384K-byte hard disk, one 30M-byte 5 1/4-inch floppy (optional)	BGA	Serial	One	\$2,325
Wang Laboratories, Inc. (617) 872-0004	Wang Laptop Computer	720	6	14.35 lb	8 x 13.3 x 5.9	2.8 x 6.3	640 x 360 or 320 x 200	Supernova LCD	None	79 plus 16 optional function keys	512Kb	1.44M-byte Winchester built-in 10-Mb disk drive, one 30-Mb 5 1/4-inch floppy (optional)	CGA	Serial	Two	\$2,325 includes disk in 10-Mb disk drive, three 30-Mb 5 1/4-inch floppy disks
West Controls, Inc. (319) 288-7004	UT700C Model 10	80386	10.5	18 lb	10 x 10 x 6	5.7 x 8.2	640 x 400	Supernova LCD, electric lensless rear light	Sealed electrolyte	88	512Kb	One 384K-byte hard disk, one 30-Mb 5 1/4-inch floppy (optional)	BGA	Serial	Three	\$2,995
	UT700C Model 710	80386	4.77 or 12	18 lb	10 x 10 x 6	5.7 x 8.2	640 x 400	Supernova LCD, electric lensless rear light	Sealed electrolyte	88	512Kb	One 384K-byte hard disk, one 30-Mb 5 1/4-inch floppy (optional)	BGA	Serial	Three	\$2,995
Health Share Systems (312) 555-5555	S185 Laptop	80386	4.77 or 6	18.5 lb	5.4 x 10.4 x 3.5	36.0	640 x 360	Monochrome transparent LCD backlit	5.5 hr. stand-by	78	640Kb 1.44M	One 384K-byte hard disk, one 30-Mb 5 1/4-inch floppy (optional), 384K-byte hard disk (optional)	BGA, monochrome monitor (optional)	Serial	Two	\$2,899
	S185 Laptop	80386	4.77 or 6	15.9 lb	5.1 x 10.4 x 3.5	36.0	640 x 360	Supernova LCD backlit, electric lensless	2.6 hr. stand-by	79	640Kb	One 384K-byte hard disk, one 30-Mb 5 1/4-inch floppy (optional)	BGA, monochrome monitor (optional)	Serial	Two	\$2,899

Top 15

FROM PAGE 59

Zenith Data Systems (312) 699-4848

Easy PC
IBM Personal Computer- or PC XT-compatible micro based on Intel Corp. 8086-compatible microprocessor running at 7.16 MHz. 512K-byte random-access memory expandable to 640K bytes. 39-in., 720K-bytes disk drive, parallel port.

Z-150
IBM PC- or PC XT-compatible micro based on 8086 microprocessor running at 4.77 or 8 MHz. Includes 768K-byte RAM expandable to 1.2M bytes. Memory expandable to 5M-byte RAM.

Z-157
IBM PC- or PC XT-compatible micro based on the 8086 microprocessor running at 4.77 MHz. Includes 512K-byte RAM expandable to 640K, with two 360K-byte floppy disk drive or 39-in., 720K-byte floppy drive.

Z-248
Uses Intel 80286 microprocessor operating at 8 MHz, zero-wait state. Compatible with IBM PC AT. Includes 512K-byte RAM expandable to 15M bytes.

Z-286
Uses the 80286 processor operating at 8 MHz, zero-wait state. IBM PC AT compatible. Offers four open expansion slots, one serial and one parallel port and 512K-byte RAM.

Z-386
Uses 16-MHz Intel 80386 32-bit microprocessor, compatible with the IBM PC AT. Includes 2M-byte RAM expandable to 16M bytes, a Winchester/floppy controller, a Winchester drive and one 54-in., 1.2M-byte floppy drive.

Compass Computer Corp.
(713) 370-0670
Compass Desktops
Based on Intel Corp. 8086 microprocessor, offers full compatibility with the IBM Personal Computer and PC XT. Includes 256K-byte random-access memory, expandable to 640K, with two 360K-byte disk drives. Offers seven expansion slots and a parallel interface.

Compass Computer 286
IBM PC AT compatible. Dual-speed Intel 80286 architecture, with 12 or 8 MHz selectable, and an 8-MHz Intel 80287 coprocessor socket. Includes a 54-in., 1.2M-byte diskette drive, seven expansion slots and 256K- or 640K-byte RAM.

Compass Computer 386
A 32-bit, Intel 80386 microprocessor with 1M-byte RAM expandable to 14M bytes. IBM PC AT compatible.

uses with 1M-byte RAM expandable to 14M bytes. IBM PC AT compatible. Includes one 40M-byte hard disk and one 1.2M-byte diskette drive. sockets for Intel 80387 and 80287 coprocessor boards.

Compass Desktops 386/20
Intel 80386, 20-MHz microprocessor using a 32-bit architecture and the Intel 82385 cache memory controller. IBM PC AT compatible. Includes 1M-byte RAM with additional 32K bytes of static RAM. One 60M-byte fixed disk drive, one 54-in., 1.2M-byte diskette drive.

AT&T
(201) 898-0000
6304 Workgroup System
Intel Corp. 80386-based machine runs advanced 32-bit Unix System V applications concurrently with Microsoft Corp. MS-DOS applications. Accommodates up to 32 users simultaneously. Desktop model includes 1M-byte random-access memory expandable to 48M bytes. Non-standing model includes 2M-byte RAM expandable to 64M bytes.

6312 Workgroup System
An IBM Personal Computer AT-compatible micro based on an Intel 80286 microprocessor running at 12 MHz. Includes 1M-byte RAM expandable to 13M bytes.

6300 Workgroup System
IBM PC and PC XT compatible.

Based on Intel 8086 processor running at 10 MHz, zero-wait state. Includes 640K-byte RAM, one or two 360K-byte floppy and one 20M-byte hard disk.

Egon America, Inc.
(800) 421-8426
Equity I
Equity II
Equity III

Loading Edge Hardware Products, Inc.
(800) USA-LEAD
Model D2
Model D

NEC Information Systems, Inc.
(312) 860-9300
Powermate 386
APC IV models (Powermate 1, Powermate 2, Business Powermate)

PC's Limited
(513) 338-4400
PC's Limited System 300
PC's Limited System 300 Turbo PC

Wyse Technology
(408) 453-1000
WysePC 386 Model 3316

WysePC 286 family (Models 2108, 2112, 2214)

Hewlett-Packard Co.
(800) 753-0900
HP Vectra CS
HP Vectra ES
HP Vectra ES/12
HP Vectra RS

American Mitac Corp.
(408) 453-1160
The Paragon 286S
The Paragon 386
The Paragon 58
The Paragon 286

Kaypro Corp.
(616) 451-4300
Kaypro PC
Kaypro 286
Kaypro 386

Packard Bell
(404) 453-1332
PB 286 Business Computer
PB 386 Supreme

Wang Laboratories, Inc.
(617) 459-5000
PC 200 and 300 series

Market share statistics for laptop provided by International Data Group

*Reading someone else's
copy of Computerworld?*

Get your own — You deserve it!

YES! I want my own subscription to **COMPUTERWORLD**. I'll pay just \$44 for 51 weekly issues — that's only 86¢ per copy. In addition, I'll receive 12 FREE issues of **COMPUTERWORLD FOCUS**.

FIRST NAME	MI	LAST NAME
TITLE		
COMPANY		
ADDRESS		
CITY	STATE	ZIP

Address shown: ☐ Home ☐ Business

For faster service call 1-800-255-6286! In NJ call 1-800-322-6286.

Canada, Central America & South America \$110/Foreign \$165. All other countries \$245 (Airmail). Foreign orders must be prepaid in U.S. dollars.

Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD

*Reading someone else's
copy of Computerworld?*

Get your own — You deserve it!

YES! I want my own subscription to **COMPUTERWORLD**. I'll pay just \$44 for 51 weekly issues — that's only 86¢ per copy. In addition, I'll receive 12 FREE issues of **COMPUTERWORLD FOCUS**.

FIRST NAME	MI	LAST NAME
TITLE		
COMPANY		
ADDRESS		
CITY	STATE	ZIP

Address shown: ☐ Home ☐ Business

For faster service call 1-800-255-6286! In NJ call 1-800-322-6286.

Canada, Central America & South America \$110/Foreign \$165. All other countries \$245 (Airmail). Foreign orders must be prepaid in U.S. dollars.

Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD

1. BUSINESS INDUSTRY (Circle one)
12. Manufacturer other than computer
 22. Financial Institution/Real Estate
 32. Medical/Law/Education
 42. Wholesale/Retail Trade
 52. Business Services (except 62)
 62. Government — State/Federal/Local
 72. Communications Systems/Public Utilities
 82. Transportation
 92. Mining/Construction/Research/Marketing/Agri.
 02. Manufacturer of Computers, Computer Related Systems or Peripherals
 12. Computer & CP Services, including Software/Service
 22. Business Time Sharing/Consulting
 32. Computer Peripheral & Device Distributor/Repairer
 42. Mail Order
 52. Vendor Other _____ (Please specify)
2. TITLE (Please Circle one)
3. TYPE OF MANAGEMENT
12. Chief Executive Officer
 22. Chief Financial Officer
 32. Chief Marketing Officer
 42. Chief Operations Officer
 52. Chief Systems Officer
 62. Chief Information Officer
 72. Chief Accounting Officer
 82. Chief Legal Officer
 92. Chief Human Resources Officer
 02. Other Company Management
4. OTHER COMPANY MANAGEMENT
12. President/Chief Executive Officer
 22. Vice President/Chief Financial Officer
 32. Vice President/Chief Marketing Officer
 42. Vice President/Chief Operations Officer
 52. Vice President/Chief Systems Officer
 62. Vice President/Chief Information Officer
 72. Vice President/Chief Accounting Officer
 82. Vice President/Chief Legal Officer
 92. Vice President/Chief Human Resources Officer
 02. Other Company Management
5. COMPUTER INVOLVEMENT (Circle one) (Please specify)
12. Computer used only for personal/invoice other than work
 22. Computer used for work
 32. Computer used for work
 42. Computer used for work
 52. Computer used for work
 62. Computer used for work
 72. Computer used for work
 82. Computer used for work
 92. Computer used for work
 02. Other Computer Involvement

348815-2

1. BUSINESS INDUSTRY (Circle one)
12. Manufacturer other than computer
 22. Financial Institution/Real Estate
 32. Medical/Law/Education
 42. Wholesale/Retail Trade
 52. Business Services (except 62)
 62. Government — State/Federal/Local
 72. Communications Systems/Public Utilities
 82. Transportation
 92. Mining/Construction/Research/Marketing/Agri.
 02. Manufacturer of Computers, Computer Related Systems or Peripherals
 12. Computer & CP Services, including Software/Service
 22. Business Time Sharing/Consulting
 32. Computer Peripheral & Device Distributor/Repairer
 42. Mail Order
 52. Vendor Other _____ (Please specify)
2. TITLE (Please Circle one)
3. TYPE OF MANAGEMENT
12. Chief Executive Officer
 22. Chief Financial Officer
 32. Chief Marketing Officer
 42. Chief Operations Officer
 52. Chief Systems Officer
 62. Chief Information Officer
 72. Chief Accounting Officer
 82. Chief Legal Officer
 92. Chief Human Resources Officer
 02. Other Company Management
4. OTHER COMPANY MANAGEMENT
12. President/Chief Executive Officer
 22. Vice President/Chief Financial Officer
 32. Vice President/Chief Marketing Officer
 42. Vice President/Chief Operations Officer
 52. Vice President/Chief Systems Officer
 62. Vice President/Chief Information Officer
 72. Vice President/Chief Accounting Officer
 82. Vice President/Chief Legal Officer
 92. Vice President/Chief Human Resources Officer
 02. Other Company Management
5. COMPUTER INVOLVEMENT (Circle one) (Please specify)
12. Computer used only for personal/invoice other than work
 22. Computer used for work
 32. Computer used for work
 42. Computer used for work
 52. Computer used for work
 62. Computer used for work
 72. Computer used for work
 82. Computer used for work
 92. Computer used for work
 02. Other Computer Involvement

348815-2



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 55 NEPTUNE, NJ 07754

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

CIRCULATION DEPARTMENT
P.O. Box 1565
Neptune, NJ 07754-9916



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 55 NEPTUNE, NJ 07754

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

CIRCULATION DEPARTMENT
P.O. Box 1565
Neptune, NJ 07754-9916





"I'm sorry, Mr. Littleton. But when they offered me my own subscription to Computerworld, I took the job."

Some people will go to any length for their own copy of **COMPUTERWORLD**.

Fortunately, you don't have to. You can get your own subscription delivered right to your desk every week. No routing slips. No waiting. No torn and dog-eared copy.

What you need to know.

When you need to know it.

You'll see what products breakthrough. And what products break down. You'll get the news and views of the industry. And the ads and advice of its leaders.

In fact, with **COMPUTERWORLD** on top of your desk, you'll be on top of your job.

And there's more. . .

In addition to your 51 issues of **COMPUTERWORLD**, you'll get — absolutely **FREE**. . .

12 issues of **COMPUTERWORLD FOCUS** — an in-depth exploration of a single critical topic each month: communications, data security, PCs, connectivity. . .

Our special Spotlight section. Head-to-head product comparisons with an at-a-glance ratings chart. Security products, LANs, graphics workstations . . . a different product in each issue.

Call today. Or use the return envelope bound into this issue . . . because your own subscription to **COMPUTERWORLD** is a perk you've earned.

1-800-255-6286

(in NJ call 1-800-322-6286)

COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

How to buy dBASE IV for \$30.

 ASHTON-TATE

dBASE III PLUS

the data management standard



Buy dBASE III PLUS today.

Buy the best data base program available today, dBASE III PLUS*. Return the registration card to get your \$30 upgrade certificate*. And you'll be one of the first to get dBASE IV** this summer.

What about your dBASE III PLUS applications? Since dBASE IV is 100% compatible with dBASE III PLUS, everything you do now will work then. Only better.  **ASHTON-TATE***

* Upgrade offer valid February 17 through July 31, 1988. Proof of purchase required.
**Trademark, version: dBASE III PLUS, dBASE IV, Ashton-Tate, Ashton-Tate Corporation. © 1988 Ashton-Tate Corporation. All rights reserved.

IN DEPTH

A competitive strategy for the rest of us

Even the small or mid-size company has the wherewithal to gain an edge

BY MICHAEL PACKER
and JANICE BRODMAN

Top executives have heard that information systems should deliver a competitive edge — yet they remain skeptical. The legacy of poor relations between the systems function and top managers means that any investment has to be justified every step of the way. But as MIS managers know, an aggressive use of technology requires a major investment.

The problem rarely lies in a lack of opportunity for using information systems; the hang-up is in the execution. As one manager comments, "It's not that we can't get good ideas for using systems strategically. Where we hit a brick wall is in actually making it happen faster or better than our competition."

Four ways to go

The firm that wants to use information systems for competitive advantage can choose from among four strategies:

- Proprietary advantage.
- One step ahead.
- Discontinuity.
- Implementation.

The first three strategies are the ones we usually hear about. In a proprietary advantage strategy, the firm develops a distinctive technology, one that sets it apart from the rest of the industry. Then it protects that tech-

nology with barriers, such as patents, extraordinary investment, long lead time or a rare skill base.

This way, the company can keep the technology away from its competitors long enough to profit and gain market share. Lotus Development Corp.'s 1-2-3 spreadsheet is an example of proprietary advantage.

A one-step-ahead strategy demands that the firm contin-

ually release new and improved technology. This ongoing innovation keeps it just ahead of the competition, despite rivals' abilities to duplicate any particular feature of the technology.

Pittsburgh National Bank is a good example: This organization was the first in its market to approve automobile loans within 24 hours. Pittsburgh National then raised the stakes to a two-hour turnaround time, and now it

is pushing for 10-minute approval. Ongoing innovations like these have brought Pittsburgh National market share and kept the bank ahead of its competition.

With a discontinuity strategy, a firm applies technology to produce a quick, decisive shift in the fundamental competitive structure of the market it serves.

One outstanding case is Citibank NA. The bank's



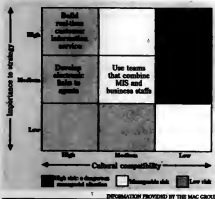
JOE BURKE

Packer is director of the information technology group at The Mac Group, an international management consulting firm based in Cambridge, Mass. Brodman is a professional associate at The Mac Group.

- Choose from four game plans
- Implement, implement, implement
- Are there penalties for inaction?

How risky is your project?

For each step, you take toward the strategic use of information systems, weigh the move's relative importance against the risk of violating your corporate culture



widespread installation of automated teller machines in New York City reportedly almost tripled its market share. When the other area banks installed their own ATMs, they found it difficult to recapture the customers they had lost. Citibank had created a discontinuity in the market.

These strategies may all make great stories, but how many companies can imitate that kind of success? The truth is, very few.

There is a fourth strategy, however, which, though rarely discussed, is potentially even more powerful than the other three. Many organizations that

could pursue the implementation strategy successfully do not even recognize it as an option.

The overlooked strategy

The core of an implementation strategy is to apply commonly available technology uncommonly well.

The executive who complained that his information systems strategies hit a brick wall identified implementation as the culprit. His predicament shows why an implementation strategy can offer a double payoff: It can deliver a competitive advantage in itself, and it improves the performance of other information systems strategies.

The advantage comes neither from cutting-edge technology nor from being first to lock up customers. It comes from detailed management know-how that makes it possible to achieve optimal performance. Those superior implementation skills then add power to every other information systems strategy.

An MIS manager has the leverage at hand to improve systems implementation. There are six key steps to follow:

- Build knowledge.
- Develop a shared vision.
- Determine desired changes in values and beliefs.
- Translate new values into concrete behavior.

crete behavior.

- Recruit power to support new values and behavior.
- Harness high-impact management techniques.

The goal of the first step, knowledge building, is to develop a clear understanding of what is at stake for the firm and how an information systems strategy

THE CORE of an implementation strategy is to apply commonly available technology uncommonly well.

can contribute. The manager must learn and be able to communicate to others the company's strengths and weaknesses. He must size up the corporate culture, including beliefs about the role of information systems, and zero in on the firm's customers and competition.

To start, draw a picture of the chain of business activities in the firm and the company's relationship to the outside world. For each activity, identify its cost, the support information systems provides it and the dynamics of support costs as demand

changes. Also, consider how customers are affected if the activity is performed extremely well or very poorly.

Then, ask yourself these three questions:

- Can information technology improve the business process? Can you serve customers more quickly, improve the consistency of internal decisions or restructure the expense base of the firm? For example, will giving sales agents laptop computers reduce order-to-shipment time?
- Are there penalties for inaction? If you don't begin today, will you fall behind rivals who did invest in system flexibility and can now develop new products faster than you can respond?
- Are there ways to use information systems to add value via distribution channels? For example, can an interorganizational computer system linked to customers make it easier and more attractive for them to buy from your firm rather than from rivals?

It is also important to look at the ways the firm has used information technology successfully in the past and what people's expectations might be about how the systems organization can make the biggest contribution. In the small appliances division of a large consumer products

This announcement is neither an offer to sell nor a solicitation to buy these securities

March 22, 1988

EMC²

EMC Corporation

EMC Corporation is pleased to announce the commencement of trading of its common shares of stock on the New York Stock Exchange, under the symbol EMC.

Salomon Brothers Inc. Merrill Lynch Capital Markets

NOW WHEN YOUR DL/I DATA BASE COMPLAINS YOU KNOW IT'S REALLY SERIOUS.

How often has your data base cried wolf, giving you hundreds of messages or cryptic descriptions of hidden performance problems? You know most of them aren't worth looking at, but you have to read each message anyway.

Sooner or later, you start to ignore them—even the ones that turn out to be serious.

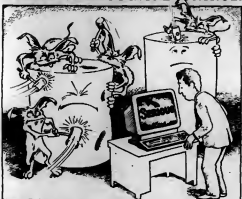
With Data Base Control, we only warn you about those problems which, based upon your own experience, are real

and serious ones. This saves time otherwise spent reading mountains of paper only to find that everything is still fine. Real problems are now no longer overlooked.

DBC's threshold driven functions manage DLI and MVS disk space, analyze data base performance, and monitor batch applications.

So don't let your data base cry wolf. Take control, call: 1-800-833-9103 or 201-549-7335 (NJ) and ask for a 30 day free trial.

DBC. WE GIVE YOU MORE CONTROL.



SCHUMANN CONSULTING GROUP

333 Sylvan Avenue, Englewood Cliffs, N.J. 07632

firm, senior management wanted an information strategy that would deliver bottom-line results. The goal was to reduce the number of tasks required to serve customers, cut costs and shorten response times. Senior managers told the head of information systems that they would support his efforts to involve end users. But at the same time, they were wary of ambitious information systems efforts because of previous lackluster results.

The head of MIS pulled together an informal team of managers and some interested end users. He chose a respected business manager to lead the group, and together the team identified what changes would reap the highest payoff. It chose supporting retailers and streamlining links with suppliers.

Using information technology to restructure the business process could reduce the number of steps in processing a customer order from 19 to nine, cut costs by 23% and reduce turnaround time by 60%. Moreover, the team found that functional managers had sought those improvements in the past but did not understand the costs and capabilities of the technology deeply enough to construct a specific action plan.

The team's report became the basis of an implementation strategy that contributed significantly to the division's marketing and distribution capability. Other divisions eventually used the strategy as a model for building their own courses of action.

Clear the way

The success of an implementation strategy depends on a clear vision of how it will contribute to the firm. It is up to the head of MIS to take the lead in developing that vision.

To do so, the manager must address three questions:

- How will information systems contribute to the firm's ability to compete?
- How will those systems contribute to the firm's ability to manage itself?
- How will the firm manage the technology?

It is critical that the MIS leader's words and actions consistently support the strategic vision. Discussions with systems staff and end users, the way the leader allocates time and even the information center's newsletter should all send the same message. Each group manager should then carry the message to his part of the systems organization.

In the appliance division mentioned above, the head of MIS carefully built a shared vision of how the implementation strategy would contribute to the business. First, he developed the vision among his own people, emphasizing that they would focus on making it easier to do business with their firm than with their competitors.

He explained that the new systems could provide retailers with fast inventory information they needed it and up-to-the-minute information about their orders. Electronic links with suppliers could eliminate paper and telephone interactions for routine transactions, reducing operating costs. The MIS head also made sure that when he talked with fellow officers, he discussed how information systems could improve distribution and operations.

Wanted: Changed values

In all companies, the corporate culture holds implicit or explicit beliefs about the role information technology should play.

I T IS CRITICAL that the MIS leader's words and actions consistently support the strategic vision. Discussions with systems staff and end users, the way the leader allocates time and even the information center's newsletter should all send the same message.

One way to determine the fit between your implementation strategy and the firm's beliefs is through a cultural risk assessment. There are two major steps to the process:

- Define the beliefs about information technology by developing a list of simply stated "rules of the game."
- Assess the fit between those beliefs and

the implementation strategy. How compatible is each element with the corporate culture? How important is each element of the strategy to its overall success?

If an important element of the implementation strategy is incompatible with the organization's beliefs about the technology, it represents an area of high cultural risk that must be resolved (see chart

page 70). One resolution is to change the strategy. Another is to try altering the current corporate beliefs. The latter solution is difficult, however, and you will need solid commitment from the top to fulfill it.

Consider the experience of one multinational insurance company. A team of information systems staff and end users conducted a cultural risk assessment of the firm's new implementation strategy. First, the team listed the major elements of its strategy:

- Use teams of systems staff and full-time, dedicated business representatives to specify, build and implement systems. Have the teams report to senior business executives—not to MIS.
- Build a real-time customer service

Let Chipcom help broaden your Ethernet horizons.

Few will argue that the Ethernet IEEE 802.3 communications standard is the fastest, most reliable, most device-compatible networking standard ever devised. Yet some things remain well beyond its reach.

Things like the VAX cluster in the engineering facility. Or the LAN in the building next door. Systems and devices so far away that baseband Ethernet alone can't cope. Which means you can't create the fully Ethernet-compatible, site-wide network you need.

Now, thanks to Chipcom, that's no longer true. Because only Chipcom offers the Ethermodem™ Series—a complete line of Ethernet Connectivity devices that network your Ethernet devices directly to your broadband cabling system. Without modification, and without performance tradeoffs.

With an Ethermodem-based Ethernet LAN, your system will cover a significantly broader area, with greater point to point distances. And do it with a system topology that remains simple and flexible, no matter how many devices you attach.

Best of all, you'll continue to get the full 10 Mbps throughput and 100% collision detection that helped make Ethernet the obvious networking choice in the first place.

Ethermodem Series devices are available for both 10Base4 and 12MHz broadband LAN systems, and include all the transceivers, remodulators, repeaters and frequency translators you need for a complete broadband LAN. They coexist with other broadband products, and are transparent to higher level network software, such as DECnet, TOPIC, XNS and TCWIP. Plus, they're fully compatible with nearly every Ethernet device ever made.

It's true that Ethernet may still be the best thing to ever happen to networking. But that's mostly because Chipcom is the best thing to ever happen to Ethernet.

For more information about the Ethermodem B12 and B118 Series of products, call us today. Government buyers, please note that Chipcom is listed on the CSA Schedule, contract number G500K87AG58385.

Chipcom Corporation, 195 Bear Hill Road, Waltham, MA 02154. 617-890-6844, Ext. 292. Telex: 928336 CHIPCOM LTD. Fax: 617-890-6857.



Chipcom gives you a whole new way to look at Ethernet.


© 1988 Chipcom. Ethermodem, DECnet, TOPIC and XNS are trademarks of Digital Equipment Corporation. Digital Equipment Corporation, The Boeing Company and Norn Corporation, respectively.

information system.

• Hire liberal arts graduates to work in the information systems department. Use their people skills and teach them technical skills.

• Push for customized coverage analysis and policy issuance.

• Build electronic links between independent agents and the firm's data bases using push-button phones and personal computers.

If the shoe doesn't fit

The team members then examined how well each element fit the firm's beliefs on information technology. They concluded that the firm's preconceptions would have to be altered. Within the systems organization, for example, it was important for people to view themselves as facilitators. Systems staff needed to see their role as building entire businesses, not just computerized information systems.

The team also felt that end users needed to view the information systems organization as a partner in developing the business rather than as just a support function. The head of MIS began a series of meetings with the chief executive officer and other top executives to help them understand how changes in these beliefs would be critical to success.

Finally, the team decided that some strategy elements were too risky. Hiring liberal arts graduates in the systems organization, for example, would create divisions. The team also dropped the idea of automating customized coverage analysis — it would trigger too much resistance among agents.

Translating values into concrete behavior

The step at which a new implementation strategy is likely to run into strong resistance. Managers must give consistent support to the new values or people will return to old values and patterns of behavior. When you handle this step successfully, you create informed, committed groups in various parts of the company that can translate the values of the implementation strategy into on-the-job reality.

Under control

It is helpful to distinguish between areas under your direct and indirect control. Where you have direct control, there are several processes you can use to change current behavior patterns and explain what the implementation strategy means for particular jobs.

One highly effective technique is to establish regular problem-solving meetings within the systems department and between that organization and end users. These could focus on identifying new behaviors that need to be adopted, obstacles to developing that behavior and ways to overcome the obstacles. Training is often essential to helping systems staff and end users understand the kinds of decisions and behavior that support the implementation strategy.

Also, make sure key systems staff get regular feedback about how well their actions and decisions promote the implementation strategy.

In a major regional bank, for example, the implementation strategy called for improved responsiveness to managers' requests. The MIS head designed brief, periodic surveys of progress, which he measured against selected performance measures.

One of the most important surveys focused on how promptly MIS responded to "quick-change" system requests. It began with a meeting between the head

Six action items

Build knowledge

- Look at your company's competitive strengths and culture
- Pin down the role and cost of systems in your business chain
- Identify competitive opportunities and penalties for inaction

2. Develop a shared vision

- Learn to show how information strategy will contribute to your firm
- Demonstrate commitment to the vision
- Build a team to spread the word

3. Pull strategy and organization together

- Pinpoint when information strategy conflicts with values and beliefs
- Think about changing parts of the strategy that won't fly
- Think about changing beliefs that clash with the strategy

4. Translate new values into concrete behavior

- Help employees apply the strategy's values in their jobs
- Set up feedback mechanisms so MIS can test its decisions
- Recruit powerful allies, when necessary, to explain rewards

5. Recruit power to support new values and behavior

- Figure out who will resist and who will support your strategy and why
- Shift power toward employees whose skills, beliefs or functions support it
- Link these power shifts, in the staff's eyes, to the strategy's values

6. Harness high-impact management systems

- Focus on the most influential management techniques
- Alter high-impact systems to support the strategy
- Make sure systems capture the information manager's need

CHART

MIS and the heads of the bank departments. Afterward, the MIS manager led a review within each systems group, bringing together systems managers and key users.

Where a manager wielded only indirect influence, he will have to use more subtle tactics. A good approach is to pick a couple of key issues that have already captured general management's attention, then show how the strategy will help resolve those issues.

A manager can, for example, build a model of how the MIS strategy will contribute to the cost structure of various businesses or functions. Another technique is to show how the strategy will improve management information.

Sometimes it is necessary to use strong-arm tactics. In the regional bank, the MIS manager convinced the CEO to come down hard on one line of business that was undermining the new strategy. A year after the bank adopted the implementation strategy, many members of the MIS staff had

gained new skills and were responding to bank managers' requests more quickly. The relationship with general managers had substantially improved.

By the end of the second year, the systems organization was being given explicit credit for helping the bank improve service and introduce new products.

Recent power

The best way to convince people that a new information technology strategy is real is to shift power to support the new values. It is essential, however, to provide a clear rationale for the power shifts, because if people do not understand changes in power, they wonder about their own value to the organization.

Bypassing the normal succession process is one way to send a loud signal to the company. A manager may want to reach

HOW LONG ARE YOUR ARMS?



AT&T's® 6500 Multifunction Communication System

Available through FICOMP, Inc. system distributors of voice and data communication products.

Only company-wide communications with the system that lets you view and interact with four processors simultaneously. The 6500 system supports concurrent BISTING, SNA, SDLC, X.25, and ASYNC sessions.

Across information moved in multiple locations. The multi-host capability puts you on-line with computers both inside and outside your company.

The 6500 system was created with AT&T's experience and knowledge of those previous generations of 3270 systems.

Its advanced capabilities enable the user to provide both local and remote support. And, it is easily upgraded to adapt to your future needs as your business grows and changes.



*AT&T is a trademark of AT&T Information Systems.

FICOMP offers you:

- Total support and immediate delivery of the 6500 Multifunction System
- Flexible purchase and lease terms across the entire product line
- Experience — so that we have supplied more than 10,000 3270 compatible terminals.

THINK FICOMP WHEN YOU REQUIRE AT&T PRODUCTS.

Contact our nearest office:

3015 Ardmore Lane
Culver, PA 19115
(215) 997-2600
(215) 997-2600 FAX

1090 King George Post Road
Suite 405
Salem, NJ 08837
(201) 738-7177
(201) 738-9125 FAX



FICOMP, INC.

Uptime

Provide 24 Hour CICS Service

IBM gave dynamic allocation to CICS... but you need Netec's CAFC to make non-stop CICS a reality. CAFC allows a single command to OPEN or CLOSE 5 or 50 files. CAFC establishes two way communication between your CICS regions and your batch jobs. Your batch jobs will always have the files they need for processing without operator intervention.

Browse and Archive CICS 1.7 Dumps

The CICS Dump Display Facility gives your support staff instant on-line and hardcopy access to CICS transaction and system dumps. You may view and print any dump without disturbing CICS. CODF archives your dumps for after-the-fact analysis. You may route dumps to remote locations.



Netec International, Inc.
P.O. Box 18538 • Dallas, Texas 75218
Telex 214419 TELECOM UD (214) 334-3648

down into the organization to place his own people in leadership positions. If this tactic is clearly linked to the values of the new strategy, it provides a compelling incentive for them to come on board. In addition, he may want to bring in outsiders whose skills and values support the strategy.

More vitality

The manager can also alter the structure of power by advancing roles that contribute to the new strategy. In one large brokerage

as the creative worker.

Resource allocation also carries a lot of impact. The head of information systems in a major bank led the systems review board in cutting projects not supporting his implementation strategy and shifting resources to those that did. As a result, critical projects were completed almost 30% more quickly than in the past.

It is also useful to conduct a review of the firm's information systems to make sure they capture the information manager's need. In some cases, data that is supposed to be in the system and is needed to make implementation successful is not actually entered or proven to be inaccurate. This may have to be worked out with executives of end-user departments.

An implementation strategy is difficult to pursue successfully. However, it offers companies the opportunity to gain an edge without a massive investment in capital resources. This is the strategy the Japanese have often used to outmaneuver U.S. firms.

What poses an unusual challenge for many managers is the need to consider both "soft" management systems — vision

and values — and "hard" ones — compensation plans and the organizational reporting structure. These areas can be orchestrated to reinforce one another.

By improving implementation from the ground up, a manager can make the value of his strategy visible to senior executives. With support from the top, he can deliver a powerful competitive edge for the firm. □

An implementation strategy offers companies the opportunity to gain an edge without a massive investment in capital resources.

firm, the implementation strategy demanded attention to new technologies and better teamwork between systems staff and end users.

The vice-president of operations, who was also head of information systems, raised the systems' advanced technology group, which reported within systems engineering, to the departmental level.

The manager also took someone from the computer operations group who had been unusually responsive to end users and gave him departmental-level responsibility for development.

Knowing this, many managers in the systems area paid more attention to end-user responsiveness in performance evaluations, and critical projects were turned around faster. Those who could not adapt were shifted into purely technical support roles or moved elsewhere in the firm.

Power redistribution is often difficult because it tends to become a zero-sum game. Furthermore, a manager may have to take power away from those who have been loyal to him. The ability to deal directly with the issue of power, however, will strongly affect the success of the implementation strategy.

High-impact management It is best to figure out early which management methods have the greatest impact on behavior and which behaviors can be influenced.

Compensation is one of these high-impact tactics. Performance appraisals tied to compensation can be used to encourage behavior that supports the new strategy. For example, since an implementation strategy calls for getting the details right, a manager may need to realign performance appraisals so they reward the precision-oriented master craftsman as well

The Secret To Maximizing Your 4381's Performance Lies In The Cards.

Main storage upgrades are the most reliable and cost-effective way to improve the performance of your 4381 computer. But only EMC main storage upgrades let you maximize the power of your 4381 computer system.

That's because only EMC provides main storage upgrades which perform memory writes twice as fast as IBM's main storage cards. EMC's Main Storage Cards Run Cycles Around IBM's Cards.

How do we do it? Simple. Our upgrades use newer technology to perform a memory write in 11 processor cycles. It takes IBM's upgrade 22 cycles to perform the same memory write. This means our upgrades increase the availability of main storage to your 4381 processor and take advantage of otherwise wasted CPU cycles.

With EMC main storage upgrades you avoid the expense of a model upgrade while still getting the performance you need to meet increasing demands on your computing resources.

Maximized Performance Is Only the Beginning.

As the world's largest independent manufacturer of main storage upgrades for IBM's mid-range computers, we deliver a lot more than just improved performance.

Start with reliability. All our upgrades for the 4381 undergo a 300-hour test and burn-in procedure, including qualification in a 4381 computer.

Then there's your \$20,000 savings on every MMS upgrade, and a guarantee that use of our upgrades will have no effect on your IBM maintenance service.

Plus our continuous lease, immediate delivery and responsive service programs.

To find out more about EMC's high-performance main storage upgrades for your 4381 computer, call today or write: EMC Corporation, Hopkinton, MA 01748-9130.

For more information, call today:

1-800-222-EMC2

(In Mass., 617-435-2541)

European Headquarters call for address:

In Germany call: 430-346-6730

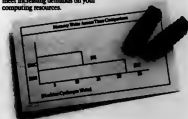
In France call: 01-40-411-391

IBM is a registered trademark of International Business Machines Corp.

Copyright EMC Corp. 1986

EMC²

The System Enhancement Company.





**At level 2,
no one hears
you scream.**

But it doesn't matter anymore.

Now, for the first time, there's Eyewitness™—a *unique* product that helps systems programmers solve the mystery behind CICS system dumps. It's quick, easy, and revolutionary.

At last, you can take system dumps in *less than two minutes*—minimizing the impact on other production regions. Enjoy menu-driven screens. Take advantage of a 50% savings in disk storage space. Rapidly debug dumps with online diagnostics. Instantly analyze storage violations, CICS abends, operator cancels, and snap dumps—online.

Eyewitness. There's nothing like it. Best of all, it's another product from the makers of The Monitor for CICS—Landmark Systems Corporation.

For a *free, 30-day trial*, call us today at 1-800-227-8911 or 1-703-922-7101 and scream no more!

LANDMARK

eyewitness
SOLVE THE MYSTERY

Landmark Systems Corporation
6551 Louisa Court, Springfield, Virginia 22156

TAKING CHARGE

James Connolly

Don't do it all yourself



For all the talk about the importance of training MIS employees to become managers by sending them to seminars on human interaction and budget planning, too many people forget about a simple lesson that must be learned the hard way.

Asked to reflect on the toughest aspect of their transition from MIS employee to MIS manager, a frequent response by those who have made the grade is that they had to learn to delegate both authority and the work load. That is "delegate," as in "to appoint as one's representative" and "to assign responsibility or authority," according to Merriam-Webster.

Several managers, speaking in formal presentations or informal conversations, recall how they went to the School of Hard Knocks to learn how to let their subordinates do what subordinates are supposed to do.

The common thread running through these managers' experience is that when they were promoted, they found they could do correctly in a matter of hours the work that their former peers — now subordinates — were messing up after days of work.

The new managers found themselves saying, "It's easier

Debit cards negotiate the road to acceptance

BY JAMES DALY
CW STAFF

You're on your way home one evening and you notice the old Chevy is low on gasoline. You stop at the nearest gas station, fill 'er up and pull out a small magnetically striped card. The attendant quickly swipes it through a machine, and you're on your way.

Halfway home, you swing by the cleaner's to pick up shirts dropped off that morning. Out comes your wallet and the same card. A clerk behind the counter handles it with the same ease and confidence that the gas station attendant did. There's one final stop: a convenience store to pick up a half-gallon of milk. Again, the card comes out.

Sound farfetched? It may not be in a few years. Although debit cards are hardly household items, there are many who think they will be. And when a special task force at the Electronic

Funds Transfer Association (EFTA) Expo meets this week in Washington, D.C., to begin ironing out the particulars of the customer-retailer debit card relationship, it may be laying the groundwork for a device that task force members said could one day be as common as a 24-hour automated teller machine card.

"We've been trying to introduce these cards since the 1960s, but today there are so many consumers walking around with bank ATM cards capable of similar electronic payment services that we feel the time of the debit card has arrived. We've already cleared a major psychological barrier," said Paul Schneider, vice-president of Deluxe Data Systems, Inc. and chairman of a task force sprinkled with retailers ranging from oil companies and banks to public policy and consumer affairs representatives.

Continued on page 76

Data View

Micros in MIS

Most systems personnel surveyed use personal computers; almost half use them daily



INFORMATION PROVIDED BY AN ASSOCIATION FOR SYSTEMS MANAGEMENT SURVEY OF 1,000 MIS MANAGERS
CW STAFF

Job One: MIS quality measurement to soar in importance

BY JAMES CONNOLLY
CW STAFF

ORLANDO, Fla. — MIS quality measurement, which results in the quantification of factors such as project costs and customer satisfaction, is set to grow in importance in MIS groups during the next two years, according to a survey of organizations now involved in or contemplating a measurement program.

But even among the 69 organizations that showed an interest in quality measurement, just more than half already have a formal measurement program, and those groups have been do-

ing measurement for an average of only 2.7 years. Almost all said they expect quality measurement to become more important within two years.

The Quality Assurance Institute recently released the results of a survey conducted at its 1987 National Conference on Measuring Data Processing Quality and Productivity, held here. The institute is an Orlando-based company that promotes quality in data processing and vendor products through conferences and seminars.

The key benefits already realized from quality measurement — with more than half of the re-

spondents reporting that they have identified tangible results — include identification of areas and activities needing attention, an increased consciousness of customer concerns and a shorter time span to fix defects.

Hallmarks of success
The MIS organizations surveyed, which the institute called leading-edge — although not necessarily representative of the DP world as a whole — said the most effective measures of quality are the cost of an activity or MIS-built product, project and activity budgets and computer or terminal availability.

Carrying the load

Transport firm's MIS boss keeps freight moving

BY JULIE PITTA
CW STAFF

OAKLAND, Calif. — As the recently appointed chief information officer at American President Companies Ltd. (APC), Jim Marston once again finds himself in the transportation business. "I've always been in transportation, one way or the other," he concedes.

Marston is no stranger to the peculiar needs of directing the MIS efforts of large transportation concerns. He began his career in the U.S. Air Force in the mid-1950s, starting as a pilot and eventually flying B-52 bombers. Before he stopped flying in 1974, Marston discovered what he calls his first love — managing a large data processing and communications organization.

Today, he is in a position in which he uses information technology as a strategic weapon to help APC, a \$1.2 billion international shipping company, grow.

Service discipline

In the Air Force, Marston learned some of the disciplines he brought with him to APC. "The Air Force gets out in front of technology as it's evolving," he says, noting that as with APC, the Air Force's systems are dispersed over a vast geographical area requiring a strong dependence on telecommunications and networking.

After retiring as an Air Force colonel, Marston joined American Airlines in 1982, signing on as vice-president of data processing and communications. Five years into the job, Marston was asked to take the helm of AMR Technical Training Corp.,

PROFILE

Jim Marston



Qualcomm Chief information officer, American President Companies Ltd.
Marston: To use systems as a strategic weapon in the competitive, cost-conscious shipping industry

one of the airline's high-technology spin-offs.

As president there, he managed what amounted to a technical training academy for travel industry personnel. Technical training offers classes in airline reservation systems and telecommunications management for American Airlines personnel. Additionally, it boasts a school for future travel agents on a tuition basis. Not only are students trained on systems they will use

Inside

- Televised MIS seminars set for September debut. Page 78.
- Fall Joint Computer Conference put on hold. Page 77.

of data for developing measures are job accounting systems, problem reporting systems and causal reporting systems such as project status reports.

The respondents listed the biggest obstacles to a successful measurement program as determining what to measure and gaining the acceptance of the DP staff and support from MIS management.

They said the best arguments for having a measurement program include not knowing whether MIS projects succeed or fail when they are not measured, improved quality and productivity, improved customer satisfaction and identifying areas in which improvements can be made.

Debit cards

CONTINUED FROM PAGE 75

Debit cards — "an awful term," Schmeizer sniffed, "and one of the things we'll definitely have to work on" — essentially function the same way credit cards do.

Product it new

But instead of the consumer paying all or part of the bill when a statement arrives each month, funds are immediately deducted at the point of sale from an account the customer keeps with a bank or the retailer.

"The debit card is pulled through a card reader, you enter a personal identifica-

tion number, and your account is debited for a transaction," said Jim Callan, senior director of the EFTA. "But there's on interest charged, on statement to sign and no fee for the card."

No interest? No fee? So who foots the bill? "We're still working that out," Schmeizer confessed, "but we're looking at the retailer for many reasons. We're convinced customers are going to use it, and retailers can use it as a means of attracting customers."

"We're also hoping they see the value in consolidating the unbelievable amount of transactions that come across their



Debita Dato's
Paul Schmeizer

desks," Schmeizer continued. "Retailers also know from experience that noncash payment alternatives tend to produce larger sales."

Hard questions

While Callan and Schmeizer said they anticipate tough questions from the retailers on the task force, they are already preparing their ammunition. "Debit cards are already successfully testing the water around the country," Callan asserted.

"If you belong to one of four or five banks in California, you can use your bank's ATM card at any of a number of

Lucky Stores. There is another organization out West, called Star Systems, which is used mostly for gasoline stations," Callan added.

While both Schmeizer and Callan admitted there are still formidable barriers to clear — with start-up costs and delays at the checkout counter being the major sticking points among retailers, according to Schmeizer — both said they are confident that debit cards will survive.

"We're facing the same challenges as did the guys who introduced the automobile, the airplane, the radio or the TV," Schmeizer said. "There's a whole battery of technological and psychological considerations we must face in successfully selling this card, but we feel its time has come."

Televised MIS seminars set for fall debut

STEWART MANOR, N.Y. — The producer of an MIS and telecommunications seminar series has planned a September debut for the interactive, televised program that will be transmitted to corporate sites via satellite.

The Computer Channel, Inc. said it will announce in May the schedule for six months of telecasts with a goal of two or three full-day programs offered each month.

Computer Channel Chief Executive Officer Joe Rizzo, formerly an executive with Private Satellite Network, Inc. (PSN), said Computer Channel is taking a different approach than PSN, with which Rizzo worked for more than a year on a pilot program to produce continuous MIS-related telecasts. He said Computer Channel will offer one-time viewing with its scheduled all-day seminars.

"It's very much in the sense of a nationwide classroom," said Rizzo, whose company is receiving funds and production support from the Technology Transfer Institute. He said two types of seminars will be offered; the first will be professional education seminars, and the second will be industry research or overview productions.

However, Rizzo declined to provide details about which topics or speakers are expected to appear on the programs.

He claimed the telecast seminars will offer savings for customers in comparison with live seminars offered at hotels or conference centers.

Rizzo said he is targeting MIS organizations in which an entire staff might be brought into a conference room to view the telecast seminar. The seminars will include lectures and question-and-answer sessions involving customer sites.

Rizzo said fees will range from \$1,500 to \$2,000 per site, depending on the program being offered. He said companies that do not have satellite dishes can rent them on a daily basis for prices that range from \$600 to \$1,000 per day, depending on location. Rizzo said that satellite subcontractors have not yet been selected.

Rizzo said Computer Channel currently has one other employee and that three more will be hired when the company moves into offices in Floral Park, N.Y.

The new SPX. Is it a multiplexer or a network?



ACM, IEEE conference postponed

The joint effort of the Association for Computing Machinery (ACM) and the Computer Society of the Institute of Electrical and Electronics Engineers, Inc., to build a broad-based conference around educational issues has suffered a setback with the suspension of the 2-year-old Fall Joint Computer Conference (FJCC).

The conference, held in Dallas in 1986 and 1987 and tentatively scheduled for Orlando, Fla., this year, has been postponed, and its functions are being dispersed to various other special-interest group meetings. The conference targeted such issues as technology transfer and le-

gal concerns relating to computers.

"The postponement or suspension of the FJCC was part of a strategic plan to expand the number of ACM conferences," said Peggy Cooper, manager of conferences for the ACM. She said the ACM's focus has turned more toward vertical conferences and that the organization is stepping back and will re-evaluate the FJCC concept at a later date. She said administrative functions carried out at the FJCC, such as awards, will be spread among 31 ACM special-interest group meetings.

The FJCC attracted about 1,250 at-

tendees in 1987, according to that conference's organizers. Much of the focus at last year's conference was on educational seminars aimed at helping organizations deal with issues such as the transfer of computer technology from research groups to the commercial world and making nontechnical managers familiar with the computer technology that they rely on or must market.

Cooper said the cosponsor relationship between the ACM and the Computer Society of the IEEE remains intact for about 12 other conferences that the two organizations host.

Carrying the load

CONTINUED FROM PAGE 75

as travel agents, but they are also taught other skills required for the job during a four-week course.

While at his desk one day, Marston received a call "out of the blue" from APC Chairman and Chief Executive Officer W. B. Seaton. It took three visits with Seaton to convince him to leave American Airlines to join the shipping firm. All Marston will say of his decision is: "He made me an offer I found difficult to turn down."

At APC, Marston's task is to manage an international network of systems that supports the company's air, rail and overseas shipping business. APC operates two computer centers: one in San Mateo, Calif., and the second in Hong Kong. Both house IBM mainframes. Additionally, the company has minicomputers in six locations in the Far East to handle heavy local processing requirements at those sites.

Nearly 2,000 terminals and 950 personal computers allow remote locations domestically, in the Far East and in the Middle East to access shipping information stored in the mainframes. Through that intricate and far-flung network, an office in Nashville can access the IBM mainframe to receive detailed information regarding a shipment.

Acn in the hole

Information systems have evolved from a support function to a strategic tool for APC, Marston says. In fact, he is reluctant to offer specifics on any upcoming investments the company will make in systems because he wants to shield APC's future strategy from competing firms.

"The transportation industry — outside of the airlines — was probably not as forward-thinking as other industries," Marston says. "But there's been a recognition of growing competition in the shipping industry, especially from the Far East."

As in other industries, shipping firms have been engaged in a cost war. With Far East companies having the advantage of less expensive labor, U.S. firms were left seeking a way to keep up. They found it with computer technology, Marston explains.

MIS has become so important to APC that Marston became its first chief information officer, a title that has become somewhat controversial among MIS professionals. Although he concedes that the CIO title can sound "awfully presumptuous" and that it has become generic, he defends its use at APC.

"It's serving a purpose," Marston maintains. "It's a recognition that information systems are a strategic element of the business. It has become a fundamental underpinning of what we do here."

The message that MIS is key to APC's strategy must reach its remote locations, Marston says. Although the firm's widely dispersed offices are linked technically, that does not always mean they are otherwise connected.

"The biggest challenge is the fact that we have a very diverse geographical spread," he explains. "There's diversity in the level of computer literacy in the companies that we operate in. For example, in the Middle East, most people haven't used computers on a day-to-day basis. We have to bring some regions that are only beginning to understand information systems into the fold."

Yes.

It's a powerful new multiplexer and a next-generation network processor.

Designed for users having multiple locations and various connectivity requirements. For the user who must accommodate different applications, speeds, protocols and transmission media. For the user who also looks to future change and growth.

All with minimum control and minimum costs. How does the SPX® do it?

The SPX is a new multiplexer with a highly versatile hardware engine.

The new architecture delivers larger capacity, more processing power, higher speeds, greater available bandwidth, and new standards of modularity.

It serves sites as small as eight channels or as large as 1,500 channels and 40 concentrated links. And by ordering the SPX in increments of eight channels, or four links, you never buy capacity you don't need.

Plus, it delivers channel speeds up to 19.2Kbps and link speeds up to 64Kbps.

The SPX is a sophisticated new network processor.

It connects multiple devices and sites into a single efficient network. With intelligent switching, dynamic routing, support for synchronous channels and a network management package.

It features a software driven architecture with a floppy disk drive — a foundation for change and growth in your data applications.

You benefit from lower operating and transmission costs, increased user productivity and equipment utilization, and substantial savings as your network needs change.

The SPX is a part of N.E.T.'s total solution to your multiplexer and network needs.

With the SPX, you can build a network that best meets your strategic requirements. A network of all SPXs. A network integrating N.E.T.'s most advanced wide-area Transmission Resource Managers, the IDNX® line. Or a network that incorporates N.E.T.'s entry-level networking multiplexers, the Series 2000 line.

The SPX also comes with something you won't find with competitive products: N.E.T.'s service and support.

N.E.T. specializes in building custom communication networks that best serve your application needs. And building an ongoing relationship with you, the client, to assure the continuing success of your applications.

Like to know more?

Call today for the SPX brochure or more information. 1-800-235-6935. Ask for Department M66

Our clients are winning.™

NETWORK

ComDesign Data Communications Group

SPX is a registered trademark of Network Equipment Technologies, Inc. N.E.T. and SPX are trademarks of Network Equipment Technologies, Inc.

CALENDAR

APRIL 1988

Association for Systems Management Annual Systems Conference. San Diego, April 17-20 — Contact: ASM, 94787 Bayley Road, Cleveland, Ohio 44138.

Info Canada '88. Toronto, April 18-19 — Contact: Data Processing Management Association, P.O. Box 1994, Peterborough, Ontario, Canada K9V 3K4.

Information Industry Association Spring Conference & Exhibition. New York, April 18-20 — Contact: Information Industry Association, Suite 806, 505 New Jersey Ave., Washington, D.C. 20001.

Tandy Computer Business Users' Group Annual Conference. Fort Worth, Texas, April 18-20 — Contact: Michele Ryan, Radio Shack, 1720 One Tandy Center, Fort Worth, Texas 76162.

The DB2 Tools Symposium. New York, April 18-20 — Contact: Digital Consulting, Inc., 4 Windsor St., Andover, Mass. 01810.

Sapphire Simulation Conference. Orlando, Fla., April 18-21 — Contact: The Society for Computer Simulation, P.O. Box 17960, San Diego, Calif. 92117.

IBM/BS. St. Louis, April 18-22 — Contact: Information Gatekeepers, Inc., 214 Harvard Ave., Boston, Mass. 02134.

Comnet Users' Exchange Spring Conference. Fort Lauderdale, Fla., April 18-22 — Contact: Dave Bern, CUE Conference, P.O. Box 2700, Fort Lauderdale, Fla. 33301.

Advanced Manufacturing Systems Exposition and Conference (AMS '88). Chicago, April 18-21 — Contact: Cahners Exposition Group, P.O. Box 5060, 1350

E. Trade Ave., Des Plaines, Ill. 60017.

Corporate Electronic Publishing Systems (CEPS) Show and Conference. Chicago, April 19-21 — Contact: Cahners Exposition Group, P.O. Box 5060, 1350 E. Trade Ave., Des Plaines, Ill. 60017.

Third Annual BMC Software User Group Meeting. Houston, April 19-22 — Contact: Marlene Lavanish, AT&T, Room 51460, 30 Eastingbridge Road, Parsippany, N.J. 08854.

ACH POS Seminar. Dearborn, Mich., April 20 — Contact: National Automated Clearing House Association, P.O. Box 61101, Baltimore, Md. 21264.

AMSI X12 800 '88 Seminar & Technical Exhibit. San Francisco, April 20-21 — Contact: Data Interchange Standards Association, Meetings Department, Suite 305, 1300 Diagonal Road, Alexandria, Va. 22314.

Technology Opportunity Conference, Optical Storage for Small Systems. San Francisco, April 20-21 — Contact: Raderfeld Consultants, 256 Laguna Honda

Bldg., San Francisco, Calif. 94116.

IR 80s — The Third Annual Conference and Exposition of Automatic Identification and Keyhole Sales Entry. Boston, April 20-22 — Contact: Anthony Scales, Show Manager, Systems Management Association, Inc., 3950 Ford Road, Southport, Conn. 06488.

Institute for Graphics Communication Conference on Visual Display. Des Moines, Ia., April 20-22 — Contact: Lynn Brudick, Conference Registrar, Institute for Graphics Communication, 375 Commercial Ave., Boston, Mass. 02116.

TESPO '88. Anaheim, Calif., April 20-22 — Contact: Patrick Reid, Room 615, 140 New Montgomery St., San Francisco, Calif. 94105.

Computer Dealers and Licensors Association Spring Meeting. Palm Desert, Calif., April 20-22 — Contact: CMA, 1212 Palmside St., N.W., Washington, D.C. 20007.

Human-DB. Nashville, April 24-27 — Contact: Federation of HCI User Groups, Mail Station USG-3, Dayton, Ohio 45478.

Ingress Users Association Spring 1988 Conference. San Diego, April 24-27 — Contact: Paul Adams, Program Committee Chairperson, Ingressive Systems, Inc., Suite 1-2, 2901 Wyoming Blvd. N.E., Albuquerque, N.M. 87110.

Computer-Based Training Conference & Exposition. Washington, D.C., April 24-27 — Contact: John B. Stiles, Registrar, Computer-Based Training Conference, Wargenter Publications, Inc., 38 Cheney St., Boston, Mass. 02111.

Common Spring '88 Conference Meeting Technology. Hollywood, Fla., April 24-28 — Contact: Common, Suite 600, 111 S. Wacker Drive, Chicago, Ill. 60601.

Exhaustment With The Wing-Computerable Trade-show and Conference. Los Angeles, April 25-26 — Contact: Data Base Publications, Suite 385, 8210 Capital of Time Highway, Austin, Texas 78721.

Special Briefing and Workshop on the New Computer Security Act. Reston, Va., April 26-27 — Contact: Advanced Information Management, 1000 Oaks Blvd., Westridge, Va. 22191.

Connolly

CONTINUED FROM PAGE 75

for me to do it now and do it right."

Wrong!

The lessons they learned were that they were paid to manage, not to program, and that their subordinates followed one of two paths: They didn't get a chance to improve their performance by being forced to do so, or the employees were perfectly happy to watch the new boss do everybody's work. The first group of employees couldn't be blamed for not developing their skills if they were not driven. As for those in the second group, they aren't stupid; they are just the folks who come to survive in every type of organization.

What successful managers say they have learned is that they are better off if they risk taking the heat from senior management when their first few projects are a little late in order to develop a qualified, experienced staff, rather than feed their own egos by doing everyone else's job just to have the project come in on time.

The new managers who let their workers develop — and the senior management that recognizes why a project is running late under that new manager — are the ones who can build a capable team that will very quickly learn to meet deadlines with quality work and a minimum of tummy aches.

Connolly is *Computerworld's* senior editor, management.

Not just your basic dBASE.



With more than 1.5 million users worldwide, dBASE III PLUS from Ashton-Tate is the undisputed standard in data base management software. It's versatile — built around the easy-to-use dBASE programming language. And packed with added features designed to help every user deliver more than basic results.

For example, dBASE III PLUS includes The Assistant — an on-screen tutorial designed to quickly make new beginners into old pros. And our Screen Painter — a feature that lets advanced users develop custom screen formats. And there's more. Like View, a routine that permits data-sharing between files. And the Applications Generator, a key to creating

entirely new application programs.

What's more, dBASE III PLUS supports all major network protocols, and is distributed without copy protection for easy installation on hard disks.

Best of all, right now you can buy dBASE III PLUS from Software Spectrum for just \$379. And if you do, you can expect the responsive service — from knowledgeable, professional salespeople — that makes us the most reliable source in the industry.

To find out more or open a corporate account, call toll-free: 1-800-367-0687. We'll explain why dBASE III PLUS is not just your basic data base. And why dBASE III PLUS from Software Spectrum is even better.

ASHTON-TATE®



Software Spectrum

12255 Greenville Avenue, Dallas, Texas 75243 "In Illinois, Indiana, Michigan or Wisconsin call 1-800-445-6454.

dBASE and Ashton-Tate are registered trademarks and dBASE III PLUS is a trademark of Ashton-Tate.

COMPUTER INDUSTRY

INDUSTRY INSIGHT

William Zachmann

IBM: Back to the future

Individuals, when under stress, often revert to behavior patterns typical of an earlier period of life. Technically referred to as regression, this psychological phenomenon can result, in extreme circumstances, in adults engaging in infantile behavior.

Although not nearly as extreme, IBM's recent reorganization, which created five business units under IBM United States, has a strong flavor of regression. In many ways, it involves a return to a structure with remarkable similarities to the IBM of the late 1970s, prior to John Opel's reign as chairman and chief executive officer.

These similarities are not immediately apparent to the casual observer. The underlying similarity, however, is quite distinct in the three product groups that make up the bulk of IBM's business: enterprise systems, application business systems and personal systems. These bear an uncanny resemblance to IBM's old Data Products Division, System Products Division and Office Products Division structure.

Tech territories

The Enterprise Systems business unit, like the Data Products Division, is big mainframe territory dominated by the 370 architecture of the company's 3090 series down to the 3370 machines. Like the old division, the new group is also a territory for large, Fortune 2,000 accounts. This is where the big, expensive and complicated monstrosities of the traditional air-conditioned raised-floor computer room live.

The Application Business Systems unit, like the System Products Division, is the place where nonconforming specialized architectures — initially and still primarily aimed at providing applications solutions to small and medium-size businesses — are located. Originating with the former System/3 processors, these became the System/32 and 34 during the late 1970s. The current System/36

Continued on page 81

Edelman wants all of Datapoint

Arbitrageur leads \$60M leveraged buy-out offer for LAN, mini firm he chairs

BY CLINTON WILDER
COWI

SAN ANTONIO — For the second time in less than three years, Datapoint Corp. Chairman Arthur B. Edelman has offered to take the sluggish minicomputer and local-area network company private in a leveraged buy-out.

A management and investors' group led by Edelman announced last week that it has offered \$6 per share, or a total of about \$60 million, for Datapoint's outstanding shares.

Edelman had offered an identical \$6 per share in his first leveraged buy-out attempt in

1985; however, a greater number of outstanding shares made that offer total an estimated \$100 million (CW, Sept. 9, 1985).

Canceled offer

Edelman withdrew his 1985 offer several months later (CW, May 12, 1986), citing Datapoint's expected return to profitability. Although the firm has reported profitable quarters since then, upswells at the company have not stopped.

Former Datapoint President and Chief Executive Officer Edward P. Gistaro resigned suddenly in early 1987, and the

company reported a loss of \$57.8 million on revenue of \$312 million in the fiscal year ended Aug. 1, 1987.

The group currently seeking to take control of Datapoint through the buy-out includes Edelman, Datapoint President and CEO Robert J. Potter and two investment firms: Citicorp Capital Investors Ltd. and KBA Partners L.P.

Edelman personally owns about 10% of Datapoint's 10 million shares.

Profitable pattern

If the Datapoint buy-out is successful, Edelman could follow the pattern of his first computer industry takeover, that of Management Assistance, Inc. in 1985. He proceeded to sell units of Management Assistance for tidy profits.

Both units are now prospering under new owners — the Sorbus independent computer maintenance business under Bell Atlantic Corp. and the MAI Basic Four, Inc. turnkey business system vendor as a publicly held firm chaired by New York investor Bennett LeBow.

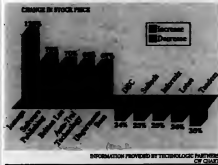
Edelman was widely expected to follow that pattern after his successful hostile takeover of Datapoint in 1985. Although he did spin off Datapoint's service business as a separate company, Intellogix Trac, Inc., he has retained the chairmanship of and significant equity positions in both firms.

Edelman could not be reached for comment last week.

Data View

Blue chips tumble

Top five and bottom five technology stock performers, January through March 1988



INFORMATION PROVIDED BY TECHNOLOGIC PARTNERS
CW QUART

The British are coming — checkbooks open

BY NELL MARGOLIS
COWI

Where is Paul Revere when you need him? Or, for that matter, Paul McCartney?

With or without a Paul to spread the news, it is "British invasion" time again. UK vendors continue to gobble up companies in the software and services sector — many of them U.S. firms — in a trend that is establishing Europe in general, and the UK in particular, as fertile ground for the software and services industry.

The recent merger of British services giant CAP Group PLC, itself a three-time buyer in 1987, with Sema-Metra SA, one of France's largest software and services entities, has created a

\$450 million, 6,500-employee hybrid called Semacorp. The Semacorp deal, currently awaiting shareholder approval but widely expected to close, is only the most recent in a series of mergers and acquisitions that are shifting ownership in the software and services industry into European, and largely British, hands.

Growth swells

According to Fort Lee, N.J.-based deal-maker and acquisitions research firm Broadview Associates, the combined total of UK and U.S. mergers and acquisitions swelled from 356 transactions in 1986 to 438 in 1987. However, growth in the UK mergers and acquisitions market has continued to outpace the

combined markets, surging 55%, from 51 transactions in 1986 to last year's record number of 79.

In addition, Broadview partner Charles Federma said, non-U.S. firms are also acquiring U.S. software and services firms more frequently, with 25 buys in 1987, up from 19 in 1986 and only six in 1985.

"We're seeing three trends here," Federma said. "First, there's the globalization of this sector. Second, European companies are positioning themselves for 1992, when the Common Market trade barriers are due to fall."

Finally, Federma said, the UK — always a strong professional services market, partly because of a relative scarcity of

Mini profits seen for mini firms

BY JAMES DALY
COWI

Financial analysts are painting a first-quarter earnings forecast that resembles a huge Golden Gate Bridge stretching across the computer industry.

As most major vendors report their financial results in the next two weeks, analysts predict the industry will be stomachily supported by on-target results in the personal computer and mainframe sectors but will sag badly in the center, where mid-size computer sales reside.

Indicators of a flattening in the minicomputer sector have been in the wind for about a month. In mid-March, heavy hitters like Digital Equipment Corp. and Wang Laboratories, Inc. scaled back their first-quarter earnings expectations, while rumors widely circulated that Prime Computer, Inc. was in the same boat.

Analysts said the falloff stems

Inside

- Unleashed: Some stock sale buys DCA quarter. Page 80.
- Intelcom President John Thibault resigns. Page 80.
- AT&T to use environmentally safe cleaning agent. Page 83.

British packaged software, is becoming a more aggressive shopper. UK buys, according to Broadview, accounted for four of the top 10 foreign acquisitions of U.S. software and services companies last year, for a total of \$126.2 million.

"There's a message for U.S. companies in all of that: Get in on the global market. Make deals in Europe," Federma said.

The message is being received. "Over the last two years, our revenues from European operations have almost doubled," said a spokesman for El Segundo, Calif.-based Computer Sciences Corp., a \$1 billion player in the computer services industry. "During the 1987 to 1991 period, we have more than \$200 million budgeted for acquisitions, and European professional services companies are one of the key areas we're looking at."

BY JAMES DALY
ON STAGE

[illegible]

DCA had purchased more than one million shares of Un-

DCA reported revenue for the quarter at \$59.2 million, an 18% increase over the \$50.3 million reported for the same period in 1987. Net income was \$12.5 million, or 82 cents per share, a 41% increase over the \$8.8 million, or 58 cents per share, reported for the same quarter one year ago.

③ Accounting needs changes to the old system by the next close.

Zachmann

FROM PAGE 79

and 36 are their current representatives, soon to be replaced by the follow-on code-named Silverlake.

Finally, the Personal Systems unit, like the old Office Products Division, includes typewriters and microproces-

sor-based workstations. Formerly encompassing just IBM Displaywriters, the unit now includes IBM Personal System/2s and RT Personal Computers.

The remaining product groups that make up IBM United States, Communication Systems and Technology Products, are more in the business of providing background technology rather than specific products.

THE PROBLEM, however, was that customers just weren't buying what IBM's Information Services said users presumably wanted.

The latter supplies IBM's semi-conductors, and the former, which is headed by newly pro-

moted IBM Vice-President Ellen Hancock, develops IBM's networking infrastructure.

By far, the bulk of IBM's product business resides in the three product groups that so closely paralleled the old divisions. Therein lie some important clues as to what effect IBM's reorganization is likely to have on its product strategy in the next few years.

IBM's explanation implies that there will be no change in product strategy as a result of the reorganization. The company's stated purpose is to help IBM be more responsive to the market and get products to market faster. IBM's basic problem is not so much the speed with which products get to market as the question of which products are brought to market and who decides among the possible candidates.

Prior to the reorganization, the former Information Services Group, now the Marketing and Services Group headed by Ed Lucente, was the primary gatekeeper. This marketing and sales organization had great influence on future product plans. The problem, however, was that customers weren't buying what Information Services said users presumably wanted.

Gordon party

With the new structure, IBM has adopted what amounts to a "let 100 flowers bloom" strategy: Customers will far more likely be able to truly decide what the company should sell if IBM takes into account what users buy and don't buy. In other words, IBM's new organization means that product introductions are likely to be more numerous, more diverse and more likely to compete with one another than in the recent past.

Rather than let planners in the Information Services Group "rationalize" the product line, IBM will now adopt a more liberal "throw it up against the wall and see if it sticks" approach to product introductions. Proponents of products within IBM are more likely to get their ideas to market. At the same time, IBM will also be much more likely to kill off unsuccessful products.

A potential casualty of all this will be IBM's recent efforts to approximate DEC's "one company, one architecture" strategy. While IBM will certainly continue to tout the integration of solutions like Systems Application Architecture, the reality is likely to be more diversity and more internal competition among IBM products.

The superficial result will be an even more chaotic situation regarding IBM's overall strategy. The deeper and more promising prospect, however, is a more vigorous IBM that really does start building what users want — instead of what IBM planners think they want.

Zachmann is vice-president of research at International Data Corp.



FOUNDATION



Hayes

At 9,600 bps

At 19,200 bps

A MODEM THAT IS TWICE AS GOOD AS IT LOOKS.

It says 9,600 bps. But for this modem, transmitting data at 9,600 bps over dial-up lines isn't the half of it.

Its built-in data compression can boost throughput to 19,200 bps. While error-control prevents loss of data.

With no effort on your part—no selecting protocols, no compressing files.

A V-series Smartmodem 9600™ can even take the place of two modems. Because it communicates in either synchronous or asynchronous mode.

All of which makes our 9600 at least twice as good as it seems.

Or, looking at it the other way, more than double your money's worth.

For your nearest Hayes dealer, call 800-695-1225. Hayes Microcomputer Products, Inc., P.O. Box 105209, Atlanta, GA 30348.

Hayes

AT&T opts for natural cleanser

BY J. A. SAWAGE
CHICAGO

NORTH ANDOVER, Mass. — In its printed-circuit board manufacturing process, AT&T is making one small step toward preserving the earth's ozone layer.

This year, three of the company's circuit board manufacturing plants are set to replace 20% to 30% of their annual consumption of the ozone-depleting chemical CFC-113, or chlorofluorocarbon-113, with an organic substitute called Bioact EC-7. AT&T plants in Illinois, Massachusetts and Nebraska use CFCs to clean printed-circuit boards for computers and

telecommunications equipment.

AT&T plans to increase the use of Bioact EC-7 in the future, according to a spokeswoman. "Of course, the environmental reason is strong, but there is also an economic side. There will be less CFCs to be had in the future. And although the replacement cost is about the same, you can reuse Bioact. You cannot reuse CFCs," she said.

The substitute was jointly developed by AT&T and Petroferm, Inc. in Fernandina Beach, Fla. It is based on chemicals derived from citrus products and coniferous trees.

CFCs are used as a solvent in cleaning

semiconductors and circuit boards. According to a 1984 report by Menlo Park, Calif.-based SRI International, 37% of all CFCs are used in the electronics industry. CFC-113 is nontoxic to humans in the workplace and has been historically vented openly.

Last month, the National Aeronautics and Space Administration reported the ozone layer over the U.S. had declined an average of 2.3% annually since 1969 and blamed the decrease on CFCs. The decline was far higher than expected, increasing humans' risk of developing skin cancer from exposure to ultraviolet rays, which are screened by the ozone.

Finding alternatives to CFCs will be critical to the computer and electronics industries in the next few years as scien-

tists predict destruction of the ozone layer to continue. Late last month, Du Pont Co. said it would phase out manufacturing of its CFCs, which are marketed under the trade name Freon. Du Pont currently makes one-fourth of the world's CFCs.

Other major users of CFCs in computer manufacturing may not be as ambitious as AT&T but are also exploring alternatives. John Harris, IBM's director of product and process engineering, said he expects to see substantial improvements in his company's CFC consumption in the next two years. Instead of substituting chemicals, IBM's near-term plans are to improve enclosures to keep CFCs from being vented. He said IBM uses about 16 million pounds of CFCs per year — more than five times AT&T's use.

Mini profits

CONTINUED FROM PAGE 79

from pressure created by heightened sales of networked PCs and workstations, which continue to elbow in on the low end of the mini market [CW, March 21].

"Downsizing has become a fact of the industry," said David Wu of S. G. Warburg & Co. "Workstations are picking up the slack in the technical area, while networked PCs are becoming a bigger fact of life in the commercial sector."

Although conservative spending early in the year often makes this period the toughest for vendors, there are indications that the minicomputer squeeze play may be somewhat more than seasonal. A recent study by The Sierra Group, a Tempe, Ariz.-based research firm, indicates that the minicomputer's work is increasingly being usurped by powerful network servers. Another study by The Yankee Group in Boston outlines a surge of interest in mainframes. Both reports showed that users' mainframe and PC purchasing plans remain strong.

"The only reason that mainframes weren't affected this quarter is that they were hit earlier," S. G. Warburg's Wu said. "Microcomputers are now doing to the minicomputers what the minicomputer did to the mainframe."

"No one is going like gangbusters on the mainframe front, but we'll see IBM with a slight uptick in orders and earnings, NCR and Amdahl with a super earnings quarter and Gray with strong orders," said Peter Labe, vice-president of research at Drexel Burnham Lambert, Inc.

Shortfalls on first-quarter expectations at DEC and Wang may have also been the by-product of flourishing fourth quarters last year. "The revenue shortfalls were relative to expectations; people got a little too enthusiastic," said Michael Geron, a senior vice-president of research at The Nikko Securities Co.

Some analysts said economic uncertainty in the wake of last October's stock market crash has affected capital spending for technology. "People are waiting to see what is going on with the economy before committing to major projects," said George Elling, vice-president of research at Merrill Lynch & Co.

But others cautioned against using the economy as a safety net for poor performance. "Yes, people are being careful with their money, but it's not the economy, because then PC and mainframe sales would have been affected, and they haven't been," Wu said.

UNIX SYSTEM 'C' PC

VIDEO-BASED TRAINING

UNIX System Courses
UNIX System Executive
Perspective
UNIX System Overview
UNIX System Fundamentals
vii Editor
Unix System Shell
UNIX System V Internals

"C" Language Courses
"C" Language Programming
Advanced "C" Programming

PC Courses
PC Primer
Running MS-DOS
DOS for the Power User
Lotus 1-2-3
dBASE II Plus
Multibase
Word Perfect
Multiplan
Enable

Displaywrite
and many more
Free demonstration packages
available. Please call the
number below.



SEMINARS

UNIX System and "C" Language Public Seminar offerings include UNIX System Overview, UNIX System Fundamentals for Programmers, Shell as a Command Language, Shell Programming, Advanced UNIX System Commands, UNIX System Administration, UNIX System Internals, "C" Language Programming, Advanced "C" Programming Workshops, Advanced "C" Programming under UNIX, On-site seminars and custom-tailored seminars are also available.

UNIX System public seminars will be presented in seven cities throughout 1988: Washington, Chicago, Los Angeles, Boston, San Francisco, New York, and Dallas. For your 1988 schedule, please call us.

Reseller programs are available for both video-based training and software.

To order or for your free product catalog, call:

(800) 323-8649 or
(312) 967-4084

**COMPUTER
TECHNOLOGY
GROUP**

Midvale

3105 Michigan Ave. Chicago, IL 60654

SOFTWARE

386/ix Product Family, which includes:
UNIX System V.3 Run-time
VPI/x, multi-user DOS under UNIX
TEN/PLUS User Interface
Software Development System
Text Processing Workbench

MKS Toolkit, which provides:
UNIX-like tools for DOS systems

*IBM is a registered trademark of IBM.

If Networking Is About Working Together, Why Do You Feel Like You're Doing It Alone?

You're the one responsible for networking the office.

If you've never done it before, you may feel you're on the spot. If you have, you know you are.

Which is why a lot of people in your position waste no time in getting the Businessland® Gold Plan.

The Gold Plan gives you an entire networking support organization. An account

manager, systems engineers, field service technicians, trainers, and technical support professionals. Valuable people to have around.

The plan includes a thorough pre-installation consultation, a detailed network plan, hardware and software installation, training for your network administrator, as well as on-going programs to serve and support you.

There's a toll-free solution line so you're never out of touch. And remote diagnostics services that let us access, and in many cases, repair your network over the phone.

If you're feeling lonely, give us a call at 1-800-328-8383 for the Businessland Center nearest you.

BUSINESSLAND®

A Different Kind of Computer Company



COMPUTER CAREERS

Health care needs specialists

Ailing industry seeks combination of clinical insight and systems skills

BY DAVID A. LUDLOM
OF THE



Current prospects for a career in the medical world seem less than healthy for systems professionals who don't possess a comprehension of both Cobol and cardiac arrest.

After the rapid expansion of recent years, the health care industry is currently mired in slow growth; an abundance of competitors now face the prospect of a shakeout.

"Hospitals are closing or consolidating. It's not a good time to write 'there is a boom,'" says a manager at one leading vendor of health care information systems. But, the increased competition is creating some opportunities for the most qualified prospects—those who combine systems skills with a knowledge of the clinical environment.

Opportunity knocks These opportunities stem from efforts by health care providers to cut costs and provide better service, which has led them to integrate formerly isolated systems and introduce new ones.

"Health care has been lagging in applying computers," says Fred Furman, senior vice-

president of information systems at Humana, Inc. in Louisville, Ky., which operates 85 hospitals across the country. "But with the competitiveness that has emerged, every health care provider is looking for a better way to provide service, [and that] depends on computers."

The emphasis is on implementation of packaged software or turnkey systems: customizing programs, making sure data is accurate and systems are easy to use and training end users. These tasks call for analysts and project managers who understand nursing and medical technology.

"It's easier to find the technical folks, harder to find qualified, experienced systems analysts and project managers who really know the milieu," says Edward Heller, chief of computer operations at Massachusetts General Hospital in Boston.

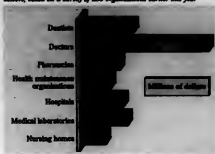
The trend is spreading to the vendors of health care systems, according to Scott Holmes, a spokesman for Shared Medical Systems Corp. in Malvern, Pa. "Hospital MIS departments all have [former] nurses as analysts, and we're beginning to see that at vendors," Holmes says. "I think the classic Cobol and MUMPS programmer is in trouble."

The fragmentation of the

health care systems field provides a solid source of employment for technically elite software engineers, according to John Sipola, chief of the Northern California region of data processing recruiting for Robert

Health care potential

Projected sales of automated systems to first-time users in health care sector, based on a survey of 250 organizations earlier this year



INFORMATION PROVIDED BY MARKET INFORMATION CENTER, INC., ST. LOUIS

Half International, Inc.

In the medical systems divisions of General Electric Co. and Hewlett-Packard Co., there is a demand for software engineers to develop high-tech diagnostic systems for functions such as axial tomography and nuclear reso-

nance imaging, Sipola says.

Unlike health care MIS, this field appears to be more and more technically oriented, calling for a command of both Unix and C. "It becomes more difficult for someone with a broad, generalist education," Sipola says. Salaries for the positions are competitive within the systems engineering community.

What about the salary for developing and deploying health

care information systems? Hospital MIS departments traditionally have lagged behind competing employers, including developers of health care information systems, but seem to have closed that gap.

"We're seeing [that] hospitals

are able to compete salary-wise, as they hire people out of the industry," Shared Medical's Holmes says.

"We view our pay scales as

satisfactory, probably no different from many other industries," adds Massachusetts General's Heller.

Two sides to every story

There are differences between the two sides of the health care information systems field. Vendors can offer career paths unavailable at hospitals, such as a move into marketing. Also, they generally provide more generous remuneration to senior managers, Heller says. On the other hand, hospital jobs offer the satisfaction of working to help the sick.

The future is likely to bring closer cooperation between the vendors and health care providers as they set their sights on increasingly sophisticated systems, Heller says. The needs will include long-term computerized storage and management of medical records and more hands-on use of systems by physicians, including decision-support applications.

Such projects will call for a grasp of obscure technologies, but hiring will still be oriented toward practical implementation at Massachusetts General, Heller says. There is no great demand for the more esoteric skills now, he says, but "if somebody walked in here with a clinically practical point of view, I'd probably hire him today."

People, Pride, Performance...

Providing expertise in CB and computer systems engineering, development, and implementation, National Systems & Research Co. (NSRC) is a rapidly expanding, high technology company based in Colorado Springs, CO. We are in the process of recruiting for several locations across the country including:

- Albuquerque, NM
- Montgomery, AL
- Tulsa, OK
- Edwards AFB, CA
- Boulder, CO
- Albany, GA
- Dahlgren, VA
- Camp Pendleton (Carlsbad), CA
- China Lake, CA
- Page, AZ

We are soliciting openings in several disciplines and are accepting qualified applicants (most positions require U.S. citizenship) at all levels with work experience in the following fields:

- Integrated Logistics Analysis
- Programming
- Systems Analysis
- Systems Design
- Computer Security
- Computer Operations
- Systems Engineering
- C3 Engineering

NSRC offers excellent growth opportunities, competitive salaries, and an outstanding benefits package. To apply, submit detailed resume with location preference and salary history to: National Systems & Research Co., 7700 Colorado Office, Suite 205, Colorado Springs, CO 80901, ATTN: MGRS.



National Systems & Research Co.

NSRC is an Equal Opportunity Employer.

now seeking Sr. Programmer Analyst

Brinkman County P&ID, the Nation's 10th largest publicly owned environmental utility, is seeking a Sr. Programmer Analyst. The position is based on local/remote basis and will involve working with a team of professionals. The successful candidate will work in a multi-functional environment, developing and maintaining computer programs for the utility. The position is located in the Denver, CO area. Salary: \$25,000-\$30,000. Send resume to: Brinkman County P&ID, 1000 17th St., Suite 100, Denver, CO 80202.

Programming environment includes use of IBM AS/400, C, COBOL, and the use of the personal computer. The position is a full-time position with benefits. The successful candidate will be responsible for the development and maintenance of computer programs for the utility. The position is located in the Denver, CO area. Salary: \$25,000-\$30,000. Send resume to: Brinkman County P&ID, 1000 17th St., Suite 100, Denver, CO 80202.

Brinkman County P&ID is an Equal Opportunity Employer. Minorities and women are encouraged to apply. The position is a full-time position with benefits. The successful candidate will be responsible for the development and maintenance of computer programs for the utility. The position is located in the Denver, CO area. Salary: \$25,000-\$30,000. Send resume to: Brinkman County P&ID, 1000 17th St., Suite 100, Denver, CO 80202.

Brinkman County P&ID is an Equal Opportunity Employer. Minorities and women are encouraged to apply. The position is a full-time position with benefits. The successful candidate will be responsible for the development and maintenance of computer programs for the utility. The position is located in the Denver, CO area. Salary: \$25,000-\$30,000. Send resume to: Brinkman County P&ID, 1000 17th St., Suite 100, Denver, CO 80202.

GREAT LAKES CITIES OF:

• Rochester, NY • Cleveland, OH • Chicago, IL • Milwaukee, WI

• Programmer Analysts
• Software Engineers

VISIBILITY VARIETY RECOGNITION
They're Yours

At GE Consulting Services, you can experience the high visibility of career opportunities, unparalleled variety in development methodologies, hardware and software, industries and applications, and personal recognition as a direct income producing participant in a consulting organization.

Our 1500 professionals work with client systems, management, technical experts, and users to build systems and solve problems for major corporate networks.

IMMEDIATE OPPORTUNITIES IN OUR GREAT LAKES REGION CITIES OF ROCHESTER (NY), CLEVELAND, OHIO, AND MILWAUKEE, WI. For individuals with 1 plus years of experience in any of the following:

SEE MAINTENANCE
MIS/DB/PC
C/C++
COBOL/PL1 BUSINESS

SYSTEMS
DEC VAX/VMS
RUN WORKSTATION
REALTIME PASCAL/PORTLAN

GE Consulting Services offers substantial opportunity for career advancement, excellent salaries and benefits that include paid medical/dental, life and disability insurance, paid education and training, paid tuition reimbursement, NO TRAVEL, and GE/CA product discounts in any of the following:



GE CONSULTING SERVICES

Regional Headquarters Office
8 Foley Village Office Park
Rochester, New York 14624
Attn: Lynne S. Mendenhall
Technician/Recruiting Manager

(716) 885-8000

UNCOVER A BRIGHT FUTURE

Equal Opportunity Employer

"For Source Edp, Computerworld is a people- and profit-puller."



Dave Grinnell
Vice President & Ad Director
Source Services Corporation
Mountain View, CA

Dave Grinnell is Vice President and Advertising Director of Source Services Corporation, the parent company of Source Edp, the world's largest recruiting firm that specializes in the computer profession. Source Edp has been an advertiser in Computerworld — almost from inception of the publication. Here's why:

"With its fantastic pass-along circulation, Computerworld not only reaches executives in computer management, but programmers, systems analysts and other individual contributors that are in particular demand by our client firms. It helps us reach the heart of our candidate base efficiently."

"Not only does Computerworld reach our market, but it reaches a market that's actively interested in computing and fostering their career growth. Conservatively, over the years, we have helped many thousands of Computerworld readers find new positions within the computer profession; many times more than those readers of other technology or trade publications. How do we know? We have an elaborate tracking system that helps us verify from which media respondents see our ads. Typically, Computerworld generates over four times more respondents who eventually are placed in new positions by Source than the next nearest computer industry publication."

"Because we're national in scope, we need the coast-to-coast coverage and support that Computerworld offers our 75 office network. We've helped Computerworld readers find candidates or move from Houston to Rochester, NY... from Seattle to Miami... you name it. That's something that local newspapers, local radio and other media we also use can't accomplish for us with as much direct success."

"In short, why do we depend on Computerworld? First, it's profitable reading for employers. Second, it's profitable reading for those seeking new employment. And third, through our services, it's also profitable reading for us. It's a 'win-win-win' situation for all."

Computerworld. We're helping employers, top professionals and people who help them get ahead get together. Every week. Just ask Dave. For all the facts on how Computerworld can put you in touch with qualified personnel, call your local Computerworld Recruitment Advertising sales representative.

COMPUTERWORLD

Sales Office:
BOSTON: 275 Coughlin Road, Box 9171, Framingham, MA 01701-9171, (617) 879-0700
NEW YORK: Pennman Plaza I, 140 Route 17 North, Paramus, NY 07652, (201) 867-1395
WASHINGTON: 3022 Jerrier Road, Suite 210, Fairfax, VA 22031, (703) 573-4115
CHICAGO: 1800 West Higgins Road, Suite 300, Rosemont, IL 60018, (312) 827-6633
LOS ANGELES: 18004 Sky Park Circle, Suite 100, Irvine, CA 92714, (714) 250-9144
SAN FRANCISCO: 18004 Sky Park Circle, Suite 100, Irvine, CA 92714, (714) 250-9144

An IDC Communications Publication

Engineering

SIEMENS

Software Quality Assurance Engineer

Siemens is one of the world's largest manufacturers of medical electronic equipment.

Currently, we have an excellent opportunity for a Software Quality Assurance Engineer (SQAE).

In this highly responsible position, you will work with Development and Quality Engineers to help define and structure software development program plans for effective validation, verification and testing of the company's software.

You will also provide overall Software Quality Assurance monitoring, implementation of Software Change Control, Software Reliability Studies and Hazard Analysis.

The successful candidate will have at least 4 years of experience in the development of microprocessor-based software, ability to understand and interpret programming languages such as C, PL/M, and Assembly. Working knowledge of medical hardware systems and experience with ASSEMBLE data 730, 870 or equivalent are preferable. BSEE or BSEE equivalent. We offer an excellent compensation/benefits package. For consideration please send your resume to:

Personnel Director
SIEMENS MEDICAL
LABORATORIES, INC.
2444 N. State Street
Methuen, MA 01844

An Equal Opportunity Employer M/F/H

S/36-38 PROGRAMMER ANALYSTS

A growing and exciting field meeting the sophisticated needs of the health care industry - gratifying international Fortune 75 corporation - desirable location in suburban Orlando - leadership position in health care information systems built through meeting expertise and technical know-how. That's the kind of environment and support you'll find at Baxter Healthcare Corporation's Systems Division.

A major provider in the development, installation and support of health care information systems, we're now seeking programmer analysts with P/3 or 3/2 experience on IBM System 36 or 38, a BSCS or equivalent and top communications and analytical problem solving skills also needed. Any hospital applications experience is helpful.

Baxter provides excellent compensation including relocation assistance, tuition reimbursement, credit union, retirement plans, and more. For consideration, send resume in confidence to: Elaine Kirscher/Dept. CW111, Healthcare Systems Division, Baxter Healthcare Corporation, 187 Bonifacio Springs Drive, Longwood, FL 32770. Equal Opportunity Employer.

Baxter

Systems Engineers & Software Engineers

Banking Product Development Opportunities in Michigan

Unisys Corporation, a \$9.7 billion company with \$1.3 billion in Research and Development funding, was created by the merger of Sperry and Burroughs, two pioneers of the Computer Age. Our financial products group, located in Plymouth, Michigan, designs and manufactures computer products for the financial industry. New computer software products as well as expanding projects involving imaging technology, have created immediate professional opportunities for degreed computer professionals with 3 or more years of related experience.

IMAGING SYSTEMS ARCHITECT

An opportunity exists for a highly creative person to play a key role in coordinating the development of hardware and software for a major commercial computer product. Strong analytic and technical skills, plus 5 or more years' related experience are required. Primary responsibilities include assessment of hardware/software tradeoffs as well as design recommendations. This person must be able to propose components and architectures for new imaging systems and applications. The preferred candidate should have a degree in Engineering or Computer Science, with a Master's or plus. Experience and/or education in simulation and modeling is also preferred.

SYSTEMS STAFF ENGINEER

This highly visible role in product development activities requires a Systems Engineer with a BSEE or Computer Science degree (Master's preferred). At least 5 years' experience in systems design/integration is necessary, as well as the ability to specify solutions from knowledge of current and future hardware devices (such as optical memories, processors, etc.). Responsibilities will include developing proposals on standard products and making technical presentations to management. Exceptional technical and communication skills are needed for this creative position in product development activities for the banking industry.

APPLICATIONS STAFF ENGINEER

The successful candidate for this position will respond to requests for proposals from the financial industry for image-based computer solutions. This person must be able to identify solutions, define application requirements, evaluate and recommend application designs for document image solutions. Three to five years' experience in information systems analysis and systems design is required, as well as a degree in Computer Science, Business or Engineering. A Master's degree and a experience in check processing and banking operations is preferred.

SOFTWARE QUALITY ASSURANCE ENGINEERS

Opportunities exist for software professionals, with experience in commercial banking applications to become a part of a dynamic product engineering team producing new products for the financial industry. These jobs require 5 years' experience in developing and executing validation testing for major software systems. A degree in Computer Science, Computer Engineering or the equivalent is required, with an advanced degree a plus. Responsibilities would include critique of designs, system documentation, quality tests, and review of proposals for custom system implementations.

Participate in developing new products for the Banking Industry by joining the fine product development staff at our Plymouth facility in Michigan. We are located in a suburban area between Metro-Detroit and Ann Arbor (University of Michigan), with a variety of life-styles from rural to cosmopolitan. Advantages of the area include excellent schools and universities, major league sports, cultural activities, nearby Canada for great vacations, and of course, Midwestern hospitality.

We offer major company benefits, excellent compensation and challenging careers for professionals. Please send your resume, indicating position of interest, to: Unisys Corporation, Human Resources Department, 41100 Plymouth Road, Plymouth, MI 48170. An affirmative action employer.

UNISYS

System Developers

Inviting resumes from individuals in the more highly technical computer related vocations such as: PhD Computer Scientists, Operating System Developers, Architects, Networks, Data Base Developers, Microcode Compiler, Artificial Intelligence, etc. Similar interest in scientific applications including data acquisition, military, process control, CAD/CAM, simulation, etc. We are a professional employment firm managed by graduate engineers. Fees are paid by the employer. All geographic locations. Send resumes or call and ask for our free Resume Workbook & Career Planner. Scientific Personnel, Inc., P.O. Box 19949 CW, Houston, TX 77234, (713) 976-6188

Scientific Personnel, Inc.

SYSTEMS DEVELOPER PROGRAM: We are seeking Computer Scientists, PhD's, to fill the position of development engineer. The successful candidate will be responsible for the design, development, and testing of computer systems. The position requires a minimum of 5 years experience in the design and development of computer systems. The successful candidate will be responsible for the design, development, and testing of computer systems. The position requires a minimum of 5 years experience in the design and development of computer systems. The successful candidate will be responsible for the design, development, and testing of computer systems. The position requires a minimum of 5 years experience in the design and development of computer systems.

ANALYSTS & PROGRAMMERS

SOFTWARE ENGINEERS

With a turnover of over 1000 client companies and 200 affiliate employment agents nationwide, RSPV has the ability to place you in a position that meets your needs to companies offering literally hundreds of choices. Current career opportunities. Send resume to:

We guide, You decide

Our no-obligation, no-pressure employment services to degreed experienced U.S. citizens and permanent residents include resume development and interview arrangement.

If you qualify, call Howard Lewis or Margaret McCue at 800-222-0183 or (in NJ) 609-687-4488 or send your resume to either address below. Our client companies pay all costs.

RSPV SERVICES

For more information, call 800-222-0183 or (in NJ) 609-687-4488. Send resume to either address below.

John M. Smith, Inc., Dept. 2, 1077 White Rd., Suite 101, New York, NY 10019

or call 800-222-0183 or (in NJ) 609-687-4488

—CONTINUED—net



MANAGER FIELD SUPPORT & SERVICE
 We are seeking a motivated individual with a minimum of 5 years of experience in the field of computer hardware and software. The successful candidate will be responsible for providing technical support and training to our customers. This position requires a strong background in computer systems, networking, and customer service. Salary is commensurate with experience. Please send your resume to: **Open**

BOSTON
MVS SYS PROG
 Internationally recognized analyst/programmer for MVS systems. Must have 10+ years of experience in MVS, JCL, and COBOL. Salary is commensurate with experience. Please send your resume to: **Open**

HARTFORD
SVS COMS-CASE TECH
 New England project seeks talented SVS programmer to join major new development project. Must have 5+ years of experience in SVS, JCL, and COBOL. Salary is commensurate with experience. Please send your resume to: **Open**

WISCONSIN
PROGRAMMER/ANALYST
 Major headquarters in Milwaukee is beginning a new phase of system development. The successful candidate will have 5+ years of experience in SVS, JCL, and COBOL. Salary is commensurate with experience. Please send your resume to: **Open**

ST. LOUIS
PROGRAMMER/ANALYST
 Technology-oriented manufacturer seeks an experienced programmer/analyst with 3+ years of experience in SVS, JCL, and COBOL. Salary is commensurate with experience. Please send your resume to: **Open**

MINNEAPOLIS ST. PAUL
SYSTEMS PROGRAMMER
 Progressive St. Louis-based firm seeks an MVS/VS/VS/VS professional with 3+ years of experience. Salary is commensurate with experience. Please send your resume to: **Open**

SOUTHERN CALIFORNIA
SVS & NETWORK PROGRAMMERS
 VM, MVS, and VTAM. CICS + + Good growth. \$38-\$48,000. ADASABE + COBOL SR. PIA. Publisher seeks senior PIA with 5+ years COBOL with direct call to Adasabe. \$38-\$48,000. **Open**

DALLAS
OUR OFFICE IS PROUD TO ANNOUNCE AN ADDITION TO OUR SERVICES
 We have developed an electronic mail system that allows you to review a sample of opportunities available in Dallas and other areas. From the convenience of your home or office, simply dial 714-987-1827 1200 BLD to link up with our modem, then the ROBERT HALF EMPLOYMENT LOCATOR PROGRAM (PHENIX), and just follow the instructions. **Open**

OVERSEAS JOBS!
REQUIRE YOUR FUTURE
 Our clients are taking 100% for their overseas jobs. **Open**

anaeac
 If you're the best, you deserve the best.

If talent, commitment and hard work to become a top-notch computer professional. At least that's the way we see things at Anaec, one of the world's fastest growing professional services companies. Anaec offers elite the paid overtime, 100% tuition reimbursement, great benefits, and more. To qualify you need only a BS in Computer Science or a BS in Business Administration. **Open**

SYNON, INC., produces Computer Aided Software Engineering products for the IBM System/36. Our products provide phenomenal productivity gains over traditional programming methods. We currently offer software and sales professionals the chance to advance their careers in our TORONTO, CHICAGO, SAN FRANCISCO and DC AREA facilities as:

Application Consultants
 We advise, train and demonstrate Synon's data modeling and application development software methodology for new and existing clients. With salary plus commission potential around \$60K, we would expect a solid background with a combination of Synon's management, high level consulting and application development packages. **Open**

Software Marketing Representatives
 We represent Synon in an assigned territory and are expected to perform at a highly energetic and professional level. Our leveraged compensation plan (salary plus commission) pays in excess of \$70K at quota. Consideration will be granted to those who have demonstrated previous success in software sales, preferably in the System/36 area. **Open**

Synon Inc. is a leading provider of computer-aided software engineering (CASE) products. Our products help software developers and systems analysts design, develop, and test software more efficiently. We are currently seeking qualified individuals for various positions in our sales and marketing departments. **Open**

ASSOCIATE V.P. & C.O.
 A & D. Inc. is seeking a motivated individual with a minimum of 5 years of experience in the field of computer hardware and software. The successful candidate will be responsible for providing technical support and training to our customers. This position requires a strong background in computer systems, networking, and customer service. Salary is commensurate with experience. Please send your resume to: **Open**

ANALYTICAL TECHNOLOGIES, INC.
 30300 Telegraph Road, Suite 184
 Birmingham, AL 35210
 Equal Opportunity Employer

DIRECTOR OF COMPUTING SERVICES
 The Director of Computing Services is responsible for the overall management of the organization's computing resources. This position requires a strong background in computer systems, networking, and customer service. Salary is commensurate with experience. Please send your resume to: **Open**

Synon Inc.
 1100 Lakeside Lane, Lakeside, CA 94043, EOE

MARKETPLACE

IBM trying to win PS/2 race

Lack of software, 'look and feel' lawsuit slow new machines' acceptance

BY CAMERON HALL
NORTH COMPUTER EXCHANGE CORP.

It is a year since the introduction of IBM's sleek Personal System/2 computer. It is a year in which 1.5 million machines were sold, and the market still awaits the software that will make the promised wonders of this machine come true.

The recent announcement of Apple Computer, Inc.'s "look and feel" lawsuit against Microsoft Corp.'s Presentation Manager — the cornerstone of OS/2 elegance and user-friendliness — has made this promise look further away. Developers get a curfew, delaying the introduction of OS/2-specific software into the computer market.

What is the essence of the look and feel lawsuit? An industry insider, when asked for his comments, mentioned a meeting he'd recently had with Dan Bricklin, co-creator of Lotus Development Corp.'s VisiCalc, who first felt the look and feel challenge. The insider walked up to Bricklin, gave him a hard stare and murmured, "Looks like Dan Bricklin." He gave Bricklin a poke and mused, "Feels like Dan Bricklin." Then he wondered why mattering, "Wonder if it really is Dan Bricklin?"

Just as the enthusiastic accep-

tance of the original IBM Personal Computer hinged on the availability of applications software, so too does the PS/2. The 1.5 million early adopters (estimated to be two million by mid-year) have a faster, slicker machine with better resolution, but this is still an incremental change

THE INSIDER walked up to Bricklin, gave him a hard stare and murmured, "Looks like Dan Bricklin." He gave Bricklin a poke and mused, "Feels like Dan Bricklin."

from the IBM PC-DOS machines, not the quantum leap into the usability that should be seen under OS/2 applications. So far, the only real winner is IBM, which is regaining some market share it lost to the clones. This may be short lived if the rumor of a Tandy Corp. Micro Channel machine becomes fact in the near future.

In the secondary market, Easter week was active with steady trading as buyers desiring

a wide variety of machines flooded the market. No April Fool's surprises were in store for market participants as most prices remained stable under good market conditions.

Ups and downs

The IBM market was up, the Compaq Computer Corp. market was virtually unchanged, and the Apple Computer, Inc. market was slightly down.

The old Personal Computer models that IBM phased out were still in ready supply. Now the only place to purchase these popular machines is the secondary market. The latest — and last — PC XT and AT models had prices rising in a demand-oriented market.

The PC XT Model 089 was up \$50 to \$1,675, and the PC AT Model 339 was up \$100 to close at \$3,350. The PS/2 Model 50, still under light supply conditions, also closed up \$100 at \$2,550. All other models traded at last week's prices.

The Apple market continued down this week, with used Macintosh prices on early models still sliding. The Macintosh 512E was down \$75, the Macintosh 512XE was down \$75 and the Mac Plus was down \$25. Macintosh SE and Macintosh II models remained at the previous week's

The BoCoEx Index

Closing prices report for the week ending April 1, 1988

	Closing price	Recent high	Recent low
IBM PC Model 076	\$800	\$900	\$750
XT Model 089	\$1,350	\$1,350	\$1,175
XT Model 089	\$1,675	\$1,700	\$1,535
AT Model 089	\$2,400	\$2,450	\$1,900
AT Model 339	\$2,750	\$2,750	\$2,500
AT Model 339	\$3,350	\$3,300	\$3,200
PS/2 Model 50	\$2,550	\$2,655	\$2,450
Compaq Portable I	\$925	\$955	\$900
Portable II	\$2,300	\$2,325	\$2,260
Portable III	\$2,825	\$2,785	\$2,475
Plus	\$1,300	\$1,375	\$900
Deskpro Model 2	\$1,600	\$1,600	\$1,450
Deskpro 286	\$2,425	\$2,475	\$2,000
Deskpro 286	\$4,975	\$4,990	\$4,900
Apple Macintosh 512	\$650	\$800	\$650
512E	\$850	\$1,075	\$800
Plus	\$1,125	\$1,250	\$1,100
SE	\$1,850	\$2,300	\$1,800
SE 20 MHz	\$2,300	\$2,350	\$2,225
II	\$4,050	\$4,200	\$3,800
AT&T 286	\$4,300	\$4,500	\$3,500
Leading Edge Model D	\$825	\$825	\$450
Apple Laserwriter Plus	\$9,300	\$3,500	\$3,100
Burroughs-Packard Laserjet	\$850	\$875	\$750

INFORMATION PROVIDED BY THE NORTH COMPUTER EXCHANGE CORP.

Closing prices

In the Compaq domain, the Deskpro 286 models were the most popular all week with the Portable II \$225 to \$2,200 and the Deskpro 286 down \$50 to

\$2,425. Other prices remained unchanged.

The Boston Computer Exchange can be reached at 800-BOCCEX or 617-542-4414 in Massachusetts.

Purchasers of used Rolm PBXs at a crossroads

BY JONATHAN L. ROGERS
BIC FINANCIAL SERVICES CORP.

Dealers in the secondary private branch exchange (PBX) market have not yet reported seeing an influx of Rolm Corp. CBX II systems being displaced into the used market by the October introduction of the Rolm 9751 CBX. Rolm is a subsidiary of IBM.

However, IDC Financial Services Corp. current fair market calls revealed significant drops in these PBX values between October 1987 and last February. The VSCBX dropped 33%, the CBX II 8000 dropped 23% and the CBX II 9000 dropped 17% in retail value. Market values should stabilize somewhat if IBM formally announces a secondary market support program.

As of February, CBX II 9000s with Rolmbox T4 were trading at 52% of current list price. Dealers have reported seeing mostly CBX II 9000 systems equipped for voice-only transmission. The

CBX II 9000 systems do not compete against the 9751 as much as a voice/data CBX II 9000 does on the used market.

Active switch

The CBX II 8000 is the most actively traded switch in the CBX II family. It was introduced four years ago and falls in the popular and highly competitive size range of 100 to 600 lines. In February, the 8000 was trading at 46% of current list price.

In the low-end market, there is much stronger demand for the VSCBX with the 8000 processor than with the older 7000 processor. In February, the former was trading at 40% of current list price; the latter was trading at 18%. The VSCBX 8000 offers more line capacity and data capability and is given more support by IBM and Rolm than the 10-year-old VSCBX 7000.

Following in the wake of the 9751 announcement, CBX II end users have been appraising the need to swap for the extra flexi-

Rolm CBX II PBXs

Current retail fair market value

	Units shipped	Line slots capacity	List price per line	Percent of list price
VSCBX 7000	1979	144	\$650	12%
VSCBX 8000	1Q/1984	304	\$979	49%
CBX II 8000	1Q/1984	600	\$640	46%
CBX II 9000	1Q/1989	10,000	\$618	52%
with Rolmbox T4				

INFORMATION PROVIDED BY BIC FINANCIAL SERVICES CORP.
CM 03/87

bility and functionality the 9751 offers. End users are also compelled to make a judgment call as to how long they believe IBM will render quality support for the CBX II family and whether this period covers the length of time they will require this support. This is an important point, because IBM is going to encourage the CBX II installed base to migrate to the 9751.

Supply of the CBX II product line in the secondary market will be determined by how CBX II

end users choose between the three options now available.

The first option is IBM's 20% discount off the 9751 list price to CBX II end users who installed a CBX II after Jan. 1, 1986. This offer should send many CBX II into the secondary market, because the discount is substantial and original phone sets and other equipment can be retained. Banks, brokerage houses and other businesses that require the latest technology should jump at the discount, which will

last until year-end 1989.

The second option regards a segment of end users requiring only basic switching with an emphasis on keeping expenditures for new phone equipment low by maximizing the existing system. These end users are likely to retain their CBX II and use the secondary market to obtain low cost parts and upgrades.

The third option applies to CBX II users who have experienced problems with the switch or support of the switch by IBM and Rolm. These users will be tempted to change vendors. Northern Telecom, Inc. is hoping to be the PBX pick of the hour by having the CBX II users every from IBM. Since Feb. 1, Northern Telecom has been offering a \$40-per-port rebate to CBX II users who switch to its Meridian SL-1. To make this rebate financially attractive, end users will need to sell the line cords, cabinets, phone sets and other peripherals in the secondary market.

For more information, contact IDC Financial Services Corp.'s Terry LeBlanc at 617-872-8200.

Used Equipment



We've
Got You Covered

Small To Mid-Size Systems

- S/36, S/38, S/39, SUPERLAK
- All Upgrades & Peripherals
- Customized Leasing Packages
- Lease, Buy, Or Sell
- Immediate Delivery
- Buy-Back Program
- Equipment Refurbished & Maintenance Guaranteed
- Technical Systems Support
- Distributors For Monitors, LOGON, & BMC²

NEPTUNE
MARSHALL LEWIS DIVISION

For Small To Mid-Size Systems Call
1-800-426-8733 (774) 641-0966 (In CA)

Large Systems

- 4381, 300X, 3090
- New IBM (Amdek, NAS & More)
- Peripherals & Communication Equipment
- Customized Leasing Packages
- Mid-Level CPU & DASD Upgrades
- Lease, Buy, Or Sell
- Immediate Delivery
- Equipment Refurbished & Maintenance Guaranteed

NEPTUNE

For Large Systems Call (203) 356-9382



IBM, Monitors, LOGON, & BMC² are registered trademarks of International Business Machines Corporation, Business Corporation, LOGON Corporation and BMC² Corporation respectively.

• BUY **NCR** • SELL

• SYSTEMS
• COMPONENTS

"SINCE 1974"

• PERIPHERALS
• NEW EQUIPMENT

HARWOOD INTERNATIONAL CORPORATION

100 Northshore Office Park
Chattanooga, TN 37426

615-479-0000

TELEFAX 615-479-0100

IBM PC's

CDB

IBM...36. 38. 4300. 30XX

UPGRADES
PRINTERS
CONTROLLERS
TAPES
DISKS
TERMINALS
FEATURES

• BUY
• SELL
• TRADE

800
258-2233

WHY

WHY SHOULD YOU LEASE?

WHY SHOULD YOU BUY?

WHY SHOULD YOU SELL?

WHY SHOULD YOU TRADE?

WHY SHOULD YOU UPGRADE?

WHEN YOU WANT ANSWERS,

CALL: 800-238-6405

IN TN: 901-372-3822

WE BUY - SELL - LEASE

34 - 38 - 38 SERIES 1

4321 - 4381

ALL PERIPHERAL EQUIPMENT

ALL UPGRADES

OB

COMPUTER
BROKERS
INC.

2978 SHELBY ST.

MEMPHIS, TN 38134

"SINCE 1974"



Member
American Society Of
Computer Dealers

HONEYWELL

VAX 8530 System

DEC Mainframe, Perfect
Private Company

8000 25MB CI
(Character)

HPCL, GRAB, DRAO's
27A's (100-4000 @ 125 IPS)
VAX/VMS, DECNET,
Bolt & Lane

800-255-8725

OR

303-630-2711

We Buy & Sell

DEC

Systems
Components

call 713
445-0062

Digital
computer
resale

800 Number: 800-255-8725

Memphis, TN 38134

BUY - SELL - LEASE

IBM
4381

AND FOR MORE DETAILS
Visit Our Systems Store
Manhasset, New York

Area Office 618
618-673-3000

IBM

DISPLAYWRITER

REPAIRS

DEL PDP-11
SYSTEMS &
PERIPHERALS

THE
One-Stop
EXCHANGE
• CPU'S & TERMINALS
• BASIC, FORTRAN & PASCAL
• INTERFACES, ETC.

IBM
COMPUTER
EXCHANGE INC.
1000 N. 10th St. Ste. 100
Ft. Worth, TX 76104

Call (416) 867-3100

Advertise in the
MARKETPLACE
Reason and you'll
get the response
you're looking for

Used Equipment

WE BOUGHT IBM

By the thousands.

And we still do. Computer Marketplace has bought thousands of IBM Series 1, S/3X, 43XX, 30XX, disc and tape drives, printers and other peripherals and we are very interested in offering you top dollar for yours.

We also deal in telecommunications equipment such as multiplexers, modems and port selectors.

Or if you have a need to buy, call us first and BUY DIRECT from the...

**COMPUTER
MARKETPLACE**

800-858-1144

In California, dial (714) 735-2102
305 East 5th Street, Corona, CA 91719



IBM is a registered trademark of International Business Machines Corp.

Get the Fax.

digital

FOR SALE!

805 XBAE
DEC NET VMS
IMMEDIATE DELIVERY
\$429,500

SA 482
NEW
\$61,000

VT241-AA
VT24K-AA
NEW
\$1,850

VT320-CA
NEW
\$470

DHU11-M
CK-DHU11
\$3050

8500, 8700 SERIES
F1007
DECODER MODULE
NEW **\$29,495**

Merida
Trading Group

4C Gill Street
Woburn, MA 01801

dda
DIGITAL DEALERS ASSOCIATION

Merida...
service is our strongest suit!
(617) 933-6790
FAX 617-933-7884

Digital and DEC are registered trademarks of Digital Equipment Corp.

BUY OR SELL NEW OR USED

IBM PC * XT * AT * PS/2
COMPAQ * HP * AT&T * WANG
MACINTOSH * APPLE 2

1-800-262-6399

**Boston
Computer
Exchange
Corporation**
MA 617-542-4414
FAX 617-542-8849



IBM 5520 FOR SALE

- 5625 082 and 051 LPU's
- 5653 Terminals
- 5219 Printers
- 8870 Lasers
- 5258 Imagers

Please call:
Mrs. Alexander
at (213) 699-6351

DEC VAX & POP 11 BUY-SELL-NEW-USED

Systems, Peripherals, Options
Available for sale
Looking to purchase VAX
and POP 11 Systems, Hardware
LAKEWOOD COMPUTER CORP.
423 Lake Lane
P.O. Box 100, 01901
(508) 495-0495 FAX: (508) 495-0495



SALE OR LEASE IBM CPU's

3084 - Q64 NOW
3090 - 150 3/1/88
3081 - GX2 NOW

Call:
GTECH Financial Group
(214) 783-1212

FOR LEASE OR SALE
BY OWNER

3380-AE4 or AA4

3380-BE4 or BO4

QUANTITIES AVAILABLE NOW

800-634-0713
(813) 783-2500



FORTUNE LEASING
Inc.

An Affiliate of Fortune Savings Bank
2380 Congress Avenue, Clearwater, FL 34621



Used Equipment

IBM and Other Computer Equipment...
For Lease, Buy or Sell.

BUY/SUBLEASE

3090-ALL MODELS

3084/3081's

4381-ALL MODELS

3380/3880-3

SELL/LEASE

3090-200/300E/400

3084 Q-96

4381-P2

3880-3 (HSN)

3380-E/D's

3274-ALL MODELS

THE
MERIDIAN
HARD-
WARE
CENTERTHE
MERIDIAN
GROUPSuite 300
570 Lake Cook Road
Deerfield, Illinois 60015
1 312-940-1200

CALL TOLL FREE 1-800-426-3090 • Ask for Jim Leman

IBM SYSTEM 36

4300 SERIES 1

SYSTEM 38

358 MB Disk Upgrades

MEMBER OF CMA

Equipment Configured To Your Requirements

• All CPU Upgrades

• SPECIAL New S/36 Models DDK, DLL, D2M & 358 MB Disk Upgrades

• Buy • Sell • Lease • Trade • New • Used

• IBM Warranty/IBM Maintenance Guaranteed

• Disk • Terminals

• Possible Lease Options Tailored to Your Needs

• Printers • Tape

714/770-2122

2 Faraday Irvine CA 92718

HONEYWELL
DPS/6 LEVEL 6 USERS

Contact your C.D. Systems marketing representative for details

READY FOR IMMEDIATE DELIVERY

DPS/6 PLUS Model 400, 2MB Main Memory, SWP, MLX-16, 4 MB-422-A Ports

2MB Memory Pack (SWP to 1MB) Memory Expansion

MDC-100 Read Disk Controller

200MB Read Disk in Cabinet

16" Table Top 4MB Cartridge Tape Unit

16" Cartridge Tape Adapter

HVS 6 Plus Operating System

CD SYSTEMS INC.
14014 Gower St Suite 200 • Omaha, NE 68144
(402) 330-2310UNIVERSITY CENTRAL
DATA PROCESSING AUTHORITY

Special programs and are required by the COPA, 401 K, Labor 50, 501 (b)(7), Rule 206, and other 2001 for the following equipment and services:

Request for Proposal No. 1354, due Thursday, April 28, 1989 at 2:30 p.m. for the purchase of 300 MB-400S based microcomputers for the STATE DEPARTMENT OF EDUCATION to administer their computer assisted remedial education program this year.

Request for Proposal No. 1355, due Thursday, April 28, 1989 at 2:30 p.m. for the purchase of software to build a computer for the STATE DEPARTMENT OF EDUCATION, no charge.

Request for Proposal No. 1356, due Thursday, April 28, 1989 at 2:30 p.m. for the purchase of software to build a computer for the STATE DEPARTMENT OF EDUCATION, no charge.

Special applications may be obtained from the COPA office. The COPA reserves the right to reject any and all bids and proposals and to waive irregularities.

Policy Number: 0091-000-0004

Now from
One Source!

IBM

BUY, SELL, LEASE, TRADE

Systems, Disk Drives, CPUs, Memory, Printers, Modems, Converters, Tape Drives, Systems, Communications, Terminals

All equipment eligible for DEC or IBM maintenance

CSI Computer Systems, Inc.
801 7th Ave 1-800-455-0400
In Mass. 617-544-0000
FAX 617-544-4100

IBM SPECIALISTS

800-251-2670

COMPUTER MARKETING
of America, Inc.

PO BOX 71 • 610 BRYAN STREET • OLD HICKORY, TENNESSEE 37138

WANG
PRIME
MICRODATA
HONEYWELL
HEWLETT-PACKARD

BUY, SELL, LEASE, TRADE

23950 Conner Park, Beachwood, Ohio 44122
(216) 252-2635 Fax 216-252-4838 Telex 305129

CRC is a Trademark of Computer Remarking Corporation

Product Listing	DATA GENERAL	Call for Prices
Systems	Memories/Options	Peripherals
MY 20000 MC01	MY20000 4.5, 16, 32 MB	0-101 SLS 1474AD
MY 20000 MC02	MY20000 4.5, 16, 32 MB	0-100 SLS 7348B
MY 10000 MC00	MY10000 2, 4, 8 MB	0-114 SLS 8024AD
MY 10000 S00B	MY10000 S00B	0-101 SLS 1504AD
MY 9000-4 S00B	0-140 S00B	0-122 SLS 2774AD
MY 7000 S00B	0-140 S00B (40 S00B)	0-100 SLS 7348B
MY 4000 DC Loaded	0-140 S00B	0-100 SLS 1504AD
MY 4000 S00B	0-140 S00B	0-100 SLS 1504AD
0-140 S00B	0-140 S00B	0-100 SLS 1504AD
Desktop All Models	0-140 S00B	0-100 SLS 1504AD
Systems Upgrades	0-140 S00B	0-100 SLS 1504AD
MY20000 Model 1 to Model 20	0-140 S00B	0-100 SLS 1504AD
MY10000 Model 1 to Model 20	0-140 S00B	0-100 SLS 1504AD
MY10000 Model 10 to Model 20	0-140 S00B	0-100 SLS 1504AD

International Computing Systems

Box 343 Hingham, MA 02043

(617) 936-9112 FAX (617) 935-0904

WANTED: DEAD OR ALIVE - All OS Systems

PRIME

EXPERIENCED
SYSTEMS AND
PERIPHERALS

BUY-SELL-LEASE-TRADE

NEW PLUS-COMPATIBLE
DISK, TAPE, MEMORYPLUS
THE FASTEST I/O
AVAILABLE ANYWHERE187 SOLUTIONS, INC.
11400 N CAVE CREEK ROAD
PHOENIX, AZ 85020602-987-0887
ASK FOR DON SHAFER

HP 3000

7833H

Available in Quantity

Processors • Peripherals
Systems

All in Stock - Immediate Delivery

All warranted to quality for manufacturer's maintenance

BUY • SELL • TRADE
RENT • LEASE

ConAm Corporation

It's Performance That Counts!
800-643-4854 213/829-2277

Computerworld's MARKETPLACE section

Looking for a low-cost, high response advertising vehicle that reaches over 575,000 information systems professionals?

Call a Computerworld project classified sales representative for all the details on the new Marketplace section.

(617) 689-7740

(617) 687-1369 ext. 400

(617) 676-0766

Used Equipment

**BUY - SELL
BURROUGHS**

All Processors,
Printers
Tapes, Disks,
Terminals

*Competitively
Priced*

Immediate Delivery

**Computer Equity
Organization**
(303) 825-2041

S/38 S/34

SERIES 1

**BUY - SELL
LEASE**

Systems, Peripherals
Upgrades

Source Data Products Inc.
800 Mario Avenue # 200
Menlo Park, CA 94025
800/328-2888
415/328-7333

IBM**BUY · SELL · LEASE****36****4300****SERIES
1****38****IBM****POWERPC****IBM****BUY · SELL · LEASE****SERIES - 1****S/23 - 34****36 - 38**

**POS - BANKING
PARTS**

AMCOM

800-328-7723

612-826-7445

5555 WEST 78TH STREET
MINNEAPOLIS, MN 55435

HP 3000

Micro 3000 and all larger
models and peripherals
New and Used

MPE software subsystems and
FLEET-MAN application
programs:

- Vehicle & Equipment
Maintenance
 - Repair Scheduling & Billing
 - Asset Tracking, Replacement
 - Inventory Control of Parts
 - Purchase Order Control
 - Fuel Management
 - Workshop Scheduling
- Planet
Information (818) 888-7888**
Systems

4341 - 4381

**Buy - Sell - Lease
Trade-In**

Systems
+ and Peripherals

Hawkes Bay Computer
(408) 956-1020

MARKETPLACE is Here!

Reach Over 612,000 Computer Professionals!

Call for all the details
(201) 967-1350 ext. 409

(617) 879-0700 ext. 758, 759, 784

See Shopping In...Computerworld's Product Classified MARKETPLACE
(201) 967-1350 ext. 409 Call for the details (617) 879-0700 ext. 758, 759, 784

Hardware**Rental & Leasing****BURROUGHS
UNISYS**

800 - 870000

A Series - V Series
All Peripherals

Low Lease Rates

Depot Maintenance

**COMPUTER PROVISIONS
CORPORATION**

800-832-4664

IBM**4381 - P11****9370 - 20****SALE OR LEASE**

*Short term Rentals
available*

Call Tom

(800) 331-8283

(213) 308-8343

CALIFORNIA

Ocean Computers Inc.

8085 W. Manchester
Playa Del Rey, CA 90283

**BUY SELL
LEASE
DEC/VAX**

**CALL
COMPUTER
PROVISIONS**

Lou Vascek

Kelly Kageis

(216) 248-7878

or

(800) 832-4664

**CALL US
FOR OUR
LEASE RATES**

800-243-5307

In CT (203) 661-4200

For the best lease rates going on IBM systems...
from system 36's to 3080's and everything in between.

Randolph

Randolph Computer Corporation
Subsidiary of Bank of Boston • 537 Steamboat Road, Greenwich, CT 06830



**It's Computerworld's
Product Classified
MARKETPLACE**

Reach Over 612,000

Computer Professionals -

When They Reach For COMPUTERWORLD!

Call for more information

(617) 879-0700 (201) 967-1350 ext. 409

We Rent & Lease

DEC

Systems
Components

Digital
computer
lease

call 713
445-0062

600 South, Box C28
Houston, TX 77058

Time & Services

How to increase
your power
without paying
the price.

Turn to Manufacturers Revenue
Data Services Corporation
for low-cost, state-of-the-art
manufacturing and information
center services

• Secure environment

• Software includes MVS/SP,
VSE/SP, VM/XA, TSO, GDQM,
CDB, and Presentation
Graphics Displayment

• Processing done on IBM 3084
3083 and IBM 4381 systems

• Accessible via many tele-
communications methods

• Volume discounts

For more information write:

Jeff Dean
Manufacturers Revenue Data
Services Corporation
P.O. Box 28
Carle Place, New York 07072

Or call (800) 998-3030

IBM MANUFACTURERS REVENUE DATA SERVICES

IBM is a trademark of International
Business Machines Corporation
© IBM Manufacturers Revenue Data

• IBM/3080 Environment MVS/XA
• IBM/4381 Environment VM/XA
• TSO, CICS, VM, CMS, PROFS
• Compilers and Packages
• No Charge Connect or Memory
• PAYROLL and MORGAN Banking
• Fixed Rates Available
• Facilities Management

for online information call

200-2400 local & toll, no parity 1-800-998-3030
and enter the access code 998-
TECHN when prompted

Financial Technologies
14285 Sullyfield Circle
Chesley, VA 22021
(703) 831-4309

Your Advertisment For:

- Used Equip
- Hardware
- Software
- Communications
- Rental & Leasing
- Time & Services
- Supplies
- Bids & Proposals
- Financial Services
- Training

can appear here...

in Computerworld MARKETPLACE
where computer professionals go
shopping each week

Call:

East/(201) 967-1350 West/(617) 620-7750
Northwest/(617) 620-7754 Midwest/(617) 620-7758

Our time is your time. Anytime.

Let us SOLV your data
processing problems. Take
advantage of our:

- IBM 3081 and 3090 CPUs
- MVS/XA environment
- Full CICS, IMS, DB2
Services
- Service Level Guarantees
- Extensive Network
Capabilities

Get the facts—Free!
1-800-366-7737

SOLV 9000 FOR REMOTE COMPUTING SERVICES

From Security Pacific
Information Services Corporation

COMPUTING SERVICES

MVS/XA VM/370 DOS/VSE
CICS TSO CMS
DB2 IMS/DBOC 4GL SAS

MULTIPLE CPUs -
50+ MIPS

TELENET, TYMNET
IBM INFORMATION
NETWORK

DEDICATED SYSTEMS
AVAILABLE

GIS

INFORMATION SYSTEMS, INC.

915 COMMERCIAL DRIVE
OAK BROOK, IL 60521
312-574-3638

TIME SHARED SUPERCOMPUTING

INTERACTIVE OR BATCH
PROCESSING FOR
TECHNICAL APPLICATIONS

- Low Rates for Disk Storage, Vector
Processing, and Connect Time
- CONVEX Supercomputer
- UNIC, with VAX/VMS and CRAY
Compatibility Features
- Vectorizing Development Tools
- Engineering Analysis Software
- Numerical Optimization Codes
- Up to 18,000 Insect Display Lines

Circle 17 on Reader Service



Interactive Computer Technologies

COMPUTER SERVICES
IBM 3084

• Batch Processing • Public Network Access

• Teleworking • Laser Printing

Route 202, Marlton, N.J. 08058

201-886-2400

Contact: Joyce Negronio

TIMESHARE

MVS - VM - DOS

- Save 25% on current charges
- Full Service - 24 hours
- Laser Printing
- Data Entry
- All Communications
- Tymnet - XCOM 8.2

Call: Ted Moulder

1-800-422-3220



Established
1936

COMPUTER TIME

DEDICATED
CPU (4341-2)

With peripherals
Convenient NJ location

\$85 per
wall-clock hour
(4 hour minimum)

Call

Dennis Shedlock
(201) 548-5800

It's NEW!

It's
Computerworld's
Product
Classified
MARKETPLACE

Supplies

MVS

PERFORMANCE ENGINEERING

- * We Guarantee performance improvements!
- * If our engineers cannot improve your systems performance according to exact written objectives - you pay nothing!
- * Done without any additional hardware or software.
- * Improve response times, maximize batch throughput, and defer hardware purchases.
- * Save potentially millions on this years budget.
- * Initial system analysis is absolutely free of charge or obligation.

**IF WE DON'T SAVE YOU MONEY
WE CHARGE NOTHING!**

Phone: 1-800-562-8722

(In Texas: (713) 451-0781)

Bennett Software Inc.
Engineering Services
POB 8694, Houston, TX 77213-8694

Inflation Fighters

Quality & Savings

Shugart, Inc. Money Back Guarantee
All Floppy Disk Drives, All External Hard Drives
Guaranteed for one (1) year or 100,000 cycles
\$29.95

2400' Floppy \$4.95 ea.
1200' Floppy \$4.95 ea.
800' Floppy \$3.75 ea.

All Tapes with Hanging Binds

We pay freight on orders over 200 tapes.

All orders shipped within 48 hours.

Call or write:

Computer Tape Mart
444 Bedford Avenue
N. Andover, New York 11701

(516) 842-8512

Bids & Proposals

STATE OF CONNECTICUT
U.S. BUREAU OF PURCHASES

REQUEST FOR
PROPOSAL (RFP)

Vendors interested in re-
sponding to an RFP for the
purchase of:

1.) An IBM 3080 400E

or

2.) An 400E upgrade to our
existing IBM 3090

Are asked to make reference to
the above RFP number and
contact:

State of Connecticut
Office of Resources
and Facilities Planning

340 Capital Avenue, 1st Floor
Hartford, Connecticut 06103
(203) 696-0394

JOHN W. OTTERBEIN
DEPUTY COMMISSIONER

Real Estate

Data Center Available For Rent

Clifton, NJ, 1000 sq. ft.
Computer Center with
separate power and air
conditioning plus 3100
sq. ft. office space. Avail-
able May 1988.

Call 201-890-7300

Examine the issues

with the
information
systems
professionals
Examine
YOUR message!

Call a product
classified rep
for all the details
The MARKETPLACE is
the place!

(617) 620-7743
(201) 967-1350 ext. 409
(617) 879-0700

SHOP in...

Computerworld's
MARKETPLACE

Call for details:

(617) 620-7756
(617) 620-7784
(617) 620-7796
(201) 967-1356 ext. 409

Training

It's NEW!
It's
Computerworld's

Product
Classified

MARKETPLACE

10 Effective Ways

To Reach
Information
Systems
Professionals

- ☐ Used Equipment
- ☐ Hardware
- ☐ Software
- ☐ Communications Equipment
- ☐ Rental & Leasing
- ☐ Time & Services
- ☐ Supplies
- ☐ Bids & Proposals
- ☐ Training
- ☐ Financial/Business Services

CALL NOW

(201) 967-1350
ext. 409

(617) 879-0700 ext.
758 or 759

or outside MA

(800) 343-6474 ext.
758 or 759

**ANNOUNCING
THE BABSON
ENTREPRENEURIAL EXCHANGE'S
SPRING SEMINAR SERIES
IN MANAGEMENT AND SALES**

If you need teamwork to get the job done... If you want to be a more effective leader... If you sell a product or service... If you want your people to be more productive... You can learn the powerful, field-tested methods of 4 masters of these arts. Their clients tell us they are best in their fields, the results will show you why.

These 1, 2, and 3 day seminars are being held at the Babson campus in Wellesley, Massachusetts. Your satisfaction is guaranteed or your money back.

1. **MANAGING FOR EXCELLENCE:** Productive teamwork. By Alan R. Cohen, Chairman of the Department of Management at Babson College, co-author of *Managing for Excellence*. Tuesday and Wednesday, May 24 and 25.

People at companies like Lotus Development, Access Technology (spreadsheeters on wheels), DEC, Polaroid, and Shennett Bank are working with Professor Cohen to develop teamwork and improve their ability to lead... at Lotus I have seen people take his training and improve their performance significantly." — Bob Nielsen

2. **PRODUCTIVITY IN SALES AND SALES MANAGEMENT:** By Mike Bosworth, President of Bosworth Sales Systems on Tuesday, Wednesday and Thursday, May 24, 25, and 26.

If you sell high-tech intangibles like software packages or consulting or programming services, this is a fast — 80 — best sales at its best. Bosworth's clients include ADP, ASK Computer Systems, Hewlett-Packard, and Management Science America (MSA). "Bosworth is a course to the best available." — Mike Porek, Vice President of MSA.

3. **THE PRACTICE OF PRODUCTIVITY:** Making it work in the real world. By Clair Vough, author of *Productivity*. Vice President of IBM from 1960 to 1975. Thursday, May 26.

You can learn methods Clair Vough developed at IBM. Since 1975 he has applied them in small businesses, also returning large profits. Learn how you can use any proportion, training, and the assignment of responsibility to get the maximum productivity and the highest quality.

4. **THE SCIENCE OF PRODUCTIVITY:** Using it in your work. By Thomas F. Gilbert, author of *Human Competence*. Wednesday, Thursday, and Friday, June 1, 2, and 3.

Use the science of productivity to learn how well your company and your people are doing, how much better they can do, and how you can make the greatest improvements for the lowest costs. Gilbert's clients over 27 years: IBM, AT&T, Control Data, and many others. Many are repeat customers. "Gilbert's workshops can be a real life in your professional development." — Dr. Carl Binder, President, Mass. NSPI.

FOR MORE INFORMATION, Call 617-888-5777 or write PPL Box 1171, Melrose, MA 02176. Free packet: outlines, leaders' accomplishments and books, registration, accommodations, and cost (\$755 to \$175 by days in class, time, and materials).

Co-sponsored by the Massachusetts Chapters of The American Society of Training and Development, The National Society for Performance and Instruction (NSPI), The Computer Writers of NCPA, and the Consultants and Entrepreneurs Group of the Boston Computer Society.

Presented in conjunction with COMPUTERWORLD

Computers come to conference centers

BY MICHAEL BALL
SPECIAL TO CW

Add operators of conference centers to the businesses that are exploiting the potential of computers.

About two-thirds of the 120 conference centers in the U.S. have been built in the last five years, and they generally have the capability to conduct micro-computer training for small groups, says Paul Gietow, director of Chase Manhattan Bank NA's Development Center.

One center with a particular emphasis on computers is the Center for Financial Studies in Fairfield, Conn., which is set up to accommodate groups of up to 35 users, says Jim Shumway, general manager of the center.

Students tend to be middle and upper managers — those at a level high enough that companies will foot the bill to provide them with off-site training lasting from one day to two weeks.

Companies often use the facility to prepare managers for the installation of new hardware or software or to conduct business simulation exercises.

A year ago, the center retrofitted a conference facility it operated on the campus of Fairfield University in Fairfield, Conn. Its parent company recently opened a microcomputer facility at Babson College in Wellesley, Mass.

Classrooms in Fairfield are equipped with 16 IBM Personal Systems/2 Model 50s with 20M-byte hard drives along with printers, scanners and a moon-chrome projection system. There are 10 IBM Personal

Computer AT clones on carts that can be wheeled to the rooms where trainees sleep.

Such facilities meet a need for Roger Raber, director of education for the National Council of Savings Institutions in Washington, D.C. His organization sponsors about 100 courses for more than 600 institutions.

Raber says the council now needs computers in its classrooms, preferably ones that trainees can wheel back to their rooms.

That's particularly true for a graduate-level program, the council's National School of Finance and Management, which meets for two-week sessions during consecutive summers.

A highlight of that program is a simulation in which students compete as directors of rival banks. "It's almost like a big computer game, but it's serious," Shumway says. "The computer tells them how they're doing and keeps changing the situation. They must calculate and react quickly."

Using the Fairfield center is more expensive than housing students for such programs in a college dormitory, which the university did in the past, but less costly than putting them up at a resort, Raber says.

The center is preferable to standard hotels, which specialize in lodging and dining rather than training, Raber claims. "Here, we can run from 7 a.m. to midnight in an atmosphere that's conducive to training."

Ball is a free-lance writer based in Boston.

COMPUTERWORLD Training Sections

Turn to the Training section of COMPUTERWORLD's issues for an interesting editorial feature addressing these and other questions.

4/25 Marketing advanced end user training What are the pros and cons of these approaches?

5/9 Mainframe vs. micro computer-based training. Ware the pros and cons of these approaches?

5/23 The cost of setting up an in-house training center. What do you need and how do you justify paying for it?

6/6 The advantages and disadvantages of teletraining. How costly and useful is it to broadcast instructor-lead sessions to remote locations?

Call for more information

617-620-7794

IBM repairs VM/SP HPO 5

BY ROSEMARY HAMILTON
OF STAFF

IBM confirmed last week that it will ship a revised release of VM/SP High Performance Option Release 5 to replace the current release, which has problems in what a spokesman called "various areas."

The new release, which the company called a "refreshed version," is scheduled to be announced at the end of this month, according to IBM. The original shipment of VM/SP HPO Release 5 began in October.

"The experiences with HPO 5 have not been pretty ones," said Bruce Mancinelli, vice-president of marketing at VM Systems Group, Inc., which sells utility software for the VM operating system.

The HPO versions of the VM operating system were designed for the larger IBM mainframes

and are the highest performing versions for the 370 architecture. The graduated one-time charge ranges from \$57,065 to \$92,265.

Problem with spool file

Although IBM did not detail the problems of HPO Release 5, users contacted last week said the primary glitch concerns the spool file system. With HPO Release 5, IBM changed the constraint of 9,900 spool files per system to 9,900 per user, a change that required a significant redesign, users said.

"It wasn't that there were a lot more problems with this release, but it concerned the spooling system. That is a very sensitive area," said Peter Kronenberg, a systems programmer at Information Builders, Inc. in New York.

Kronenberg said his facility installed HPO Release 5 in Octo-

ber and was not able to move to production mode until February. The process typically takes a few weeks.

The spool file system governs the movement of all files throughout the system, including those sent to the printer or passed among users. Each time Kronenberg's group brought the spool file up, another program bug would appear, he said.

"We have been making adjustments and will be coming out with a refreshed version that incorporates all adjustments made," an IBM spokesman said.

Romney White, president of VM/CMS Unlimited, Inc., a VM utility software company in Boston, also said the spool file system has caused users big problems.

"It was a fairly massive rearrangement," White said. "They didn't get it right, and they didn't test it enough."

Delivery date slips on IBM 3990 cache

BY STANLEY GIBSON
OF STAFF

RYE BROOK, N.Y. — Causing relief for plug-compatible manufacturers (PCM) and concern for users, IBM announced last week that the important cache memory function for its 3990 Storage Control Unit will not be shipped on schedule.

The 3990 controller, announced with IBM's 3880 Models 1, 2 and 3, and C32 disk drives in September 1987, was expected to be shipped in the third quarter of this year. While the hardware will ship in that time frame, microcode necessary for sophisticated cache functions will not be ready until the first half of 1989, IBM said.

"This is going to cause PCMs to break open a few bottles of champagne, and it will cost IBM some revenue in 1988," said Bob Durrivier, president of Advanced Research in Phoenix. "This delay heightens the window for PCMs to sell older products."

A spokesman for National Advanced Systems said his firm is going ahead with hardware development for its competing controllers and plans to deal with compatibility when microcode becomes available.

"This will make the PCMs nervous, because if IBM has a problem, then it is likely that they will have one too," said Louise Biggs, a storage analyst at Dataquest, Inc. "End users will have to redo their decision process."

IBM said the 3990 Model 1 and 2, which do not come with enhanced cache functions, will be shipped August 26. A customer may also choose to receive a Model 3 without enhanced cache functions and add those functions in the first half of 1989.

Eastern

FROM PAGE 1

crews as well as some 500 pilots. Experienced baggage handlers are likely to go if Lorenzo gains acceptance of his recent proposal to the International Association of Machinists and Aerospace Workers, which calls for handlers' wages to fall from \$15.60 to \$8 per hour in the next two years.

The new regime at Eastern also caused the early retirement of many senior computer operators who made key decisions on how the carrier responded to flight delays, breakdowns and other emergencies, according to Peter Zegan, Eastern's former director of systems analysis and design. Zegan, who is now a professor of MIS at Florida International University, left Eastern in 1983 "when it looked like they were going to lay off 53% of my people."

"Flapping in the breeze"

The brain drain at Eastern will continue to plague the carrier's service levels for some time to come, according to David Stockman, associate airline analyst at Paine Webber, Inc. "Texas Air is flapping in the breeze until [Eastern's] labor problems are settled, and it will be hard to bring people back once they have left," he said.

But, System One's development staff is exploring computer-based solutions that will improve service while minimizing the need for highly paid human experts. Intelligent scanning and decision support systems now under development are intended to automate much of the decision-making process in areas, such as flight scheduling and

baggage handling, in which Lorenzo's cost-cutting measures are taking their toll.

While Lorenzo carried on his campaign to trim Eastern Airlines' operations, he was beefing up the carrier's former computer services division, System One. Now a separate subsidiary supporting all Texas Air carriers, System One's staff has increased from 2,300 at the beginning of 1987 to its current level of 3,500.

The division's systems development work is focused on two main objectives: supporting Texas Air's computerized reservation system, which currently holds approximately 18% of the market; and developing systems to improve Texas Air carriers' performance in the most visible areas of customer dissatisfaction. Those areas include lost baggage and cargo and scheduling delays, said David Hultman, System One's staff vice-president of technology planning.

Pulling System One out of the Eastern morass and infusing its technical staff with new blood "was a smart way for Texas Air to spend its dollars," Stockman said. "You can't move forward in this industry without a state-of-the-art computer system, because all the other carriers have them."

And yet, Eastern's operational problems do not stem from its existing computer technology, which includes "some very excellent real-time systems that know exactly where every airplane is, when it is due in, what crew members are on board and where they are supposed to go next," he said. The systems provide real-time information to a team of experienced operators, including one person to coordinate flight crews, another to look

after passengers and a third to keep track of aircraft resources. The real source of trouble in the increased turnover that has left fewer seasoned operators, according to Zegan.

Don't blame the computer. Baggage delays are also caused primarily by human, rather than machine, error within Eastern, Zegan added. Although the airline has one of the industry's more advanced baggage-tracking systems — it is now used by several other airlines — "The problem is that people have to put the baggage on the right airliner and take it off again," Zegan explained. "We've had cases of a 500-pound item sitting on a Boeing 711 for two weeks."

System One hopes to address both of these trouble spots by using computers to minimize human error, Hultman said.

For example, a prototype system currently running at Houston's Hobby Airport generates bar codes for each baggage tag, from which a video scanning system can read each item's flight number, ultimate destination and owner name. Computer-controlled ramps then route each bag to the right flight. "All the handlers need to do is prevent the bags from falling off the ramp," Hultman said.

Not a manual job

Union spokesman James Conley disagreed with Hultman's implication that baggage handling expertise can be computerized so easily. "Lorenzo has been trying to make the baggage handler sound like a manual job," he said. In fact, handlers "do a lot more than route the baggage to the right airplane"; they need to balance various items to ensure aircraft stability and efficient fuel

System one for all

System One operates data centers in three locations to automate airlines acquired by Texas Air



INFORMATION PROVIDED BY TEXAS AIR GROUP
ST-10002

use while in flight.

Although the video scanning system might eventually do so adequately job, "knowing what we have about implementing any new technology, I would venture to say the flying public will suffer a great deal while they're retooling out the glitches," Conley said. And "knowing Lorenzo, [the new technology] would definitely bring about a reduction in the labor force."

Texas Air also plans to automate much of the passenger intake process through a new ticketing system being tested at Continental's Newark Airport terminal in New Jersey. Passenger information is coded on a magnetic card that is input when the passenger boards.

The information culled from the magnetic cards would then

be fed back to the massive IBM mainframe complex in Houston — which houses Texas Air's centralized scheduling and reservation systems — and also into Tamsam Computers, Inc. machines that are currently being installed by Texas Air.

Directing traffic

In an effort to address scheduling and other service-related problems, System One is trying to "automate as much of flight operations as possible" through knowledge-based systems that will embody the expertise some employees may lack, Hultman said. An expert system called Gatekeeper, which is now running on an alpha-test basis on Symbolics, Inc. and Digital Equipment Corp. computers at Houston Intercontinental Airport, is said to make judgment calls on the routing of incoming aircraft to terminal flight gates. If the trial is successful, the system will soon go into operation at other Texas Air terminals, beginning with Miami and Denver.

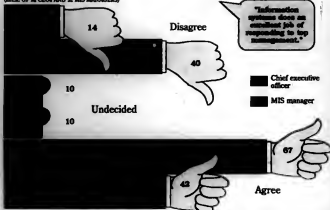
Late last month, System One began developing a knowledge-based system that allocates backup aircraft to minimize delays when flights are held up "during irregular scheduling periods," Hultman said. Developers should have a prototype running within three to four months.

Such systems will save the company money, Zegan said, by "reducing the number of people required to make decisions." On the other hand, Texas Air might run into more trouble with Eastern's unions if they get the idea that the new technology is just another of Lorenzo's strategies for getting along with a smaller — or at least lower paid and less skilled — work force.

TRENDS

MIS management

MIS tougher on its performance than top management is

NUMBER OF RESPONDENTS
(BASED ON 92 CEOs AND 92 MIS MANAGERS)

There is a saying that a little guilt never hurt anyone. In the case of an MIS executive, that might be amended to include the phrase "even if you're innocent."

It appears that information executives — those carrying the title, or at least the job description, of chief information officer — may be their own harshest judges, at least compared with how their chief executive officer bosses judge MIS manager accomplishments. That is one conclusion from a survey of CEOs and information managers conducted by United Research Co. and *Businessweek* magazine.

As part of a survey of 876 executives, United Research matched the responses of 92 CEOs with their top information managers. The results show a pattern of CEOs giving the information systems groups higher marks than those groups' managers gave themselves.

Some of the sharpest differences appeared in questions relating to corporate relationships and strategies and how information is used. For example, 67 out of 92 CEOs, but only 42 out of 92 MIS managers, agreed with the statement that MIS does an excellent job of listening to and designing systems for managers at the top management level.

But the contrast blurred when the questions moved away from the CEO's immediate realm; more CEOs were unsure of their opinions.

JAMES CONNOLLY

Meets information needs, strategic goals

INFORMATION PROVIDED BY UNITED RESEARCH CO.
C/O CHARTER AMT 1 DAYMARK

INSIDE LINES

Taking the long (Dec)view. Don't hold 'your breath waiting for Decview, DEC's long-expected answer to IBM's Netview judgment. A consultant who spoke recently with DEC reports that the company will not put off any major network management announcements until next year, although it is likely to introduce a Netview link by year's end. The reason for the delay: DEC wants to build its system around ISO Open Systems Interconnect protocols, which are still pretty amorphous.

I know, it's only floppy disks, but it's dumping. Verbatim, the Kodak subsidiary that makes floppy diskettes, has convinced the U.S. International Trade Commission to investigate charges that Japanese firms are dumping 3 1/2-in. diskettes in the U.S. Verbatim says the prices of Sony, Maxell and Fuji diskettes are 50% lower in the U.S. than in Japan. However, Verbatim's complaint must go through several more government steps before a final ruling, so don't look for any remedies until late this year or early 1989.

Just the fax, please. Datafax Corp. will introduce Microfax Version 2.0 tomorrow, reportedly adding 30 new and enhanced features — including compatibility with most popular scanners and printers — at no increase in price from the earlier version. Reportedly designed to exceed the capabilities of many stand-alone facsimile machines, Microfax Version 2.0 will include network node compatibility, a faster print speed, a 9.6K bit/sec. transfer of any computer file — not just fax files — and group file support, said to let users set up distribution lists and groups of documents to be faxed automatically. In addition, users create documents without leaving the Microfax program.

Call it NETSAXLINKS and sell it like sausage. Joining Tandem's SaaS and SaaSlink is the hors d'oeuvre the firm hopes will whet the appetite for connectivity in the IBM world: Netlink's SNA-Hub. Tandem says it will resell the \$17,000 communications concentrator, made by Netlink, in which Tandem bought an equity stake last year.

Good things come in threes: The IEEE will award its 1988 Alexander Graham Bell Medal to 3Com founder and Ethernet principal investor Robert Metcalfe in a ceremony May 9. Metcalfe will receive a gold medal and a \$10,000 cash prize, which he plans to donate to The Computer Museum in Boston. He serves on the museum's board of directors and was recently elected chairman of the Corporation for Open Systems. 3Com recently announced the shipment of its 500,000th Ethernet adapter, a milestone that coincides with Ethernet's 15th birthday.

Damn the lawyers and pass the ammunition. Apple's "look and feel" suit against Hewlett-Packard's New Wave has brightened interest in HP's integrated applications environment. The order rate for New Wave developer's kits has doubled since the suit was filed, according to Robert Frankenberg, general manager of HP's Information Systems Group. More than 100 have been sold to date, he claims. HP has also decided to hold two more New Wave developers conferences: one on the East Coast and another in Europe.

Daugherty, Take Two. What do you get when you merge Tandem and Ungermann-Bass? Why T-UBby, of course, my Silicon Valley quipsters. The recently formed entity is expected to announce its plans tomorrow for providing full tolerance under IBM's OS/2 and Microsoft's LAN Manager at a press conference at the East Coast version of Microsoft's Advanced Network Development Conference.

Like, there'll be wicked awesome. Microsoft will have an "incredibly major" press conference in New York Wednesday at the second go-round of the above-mentioned network developers' conference. What was to be a small briefing has snowballed into something larger, a Microsoft executive said, promising vaguely that a lot of "high-quality" companies will attend. A source close to Microsoft speculated that a lot of second-tier Microsoft network OEMs, such as Intel, Western Digital and DEC, will probably be announcing plans to license the LAN Manager.



It'll Do Wonders With The Economy.

The TeleVideo® 905 terminal is a wonder in the world of low cost terminals: a product that gives you more, for less.

Just \$409 gets you an extremely reliable ASCII terminal packed with features other terminal makers charge extra for. There's a sleek monitor case with full tilt and swivel. A 14" high-contrast, super-dark screen with

crisp, clear resolution. A full-size keyboard with sculpted keycaps. 32 non-volatile programmable function keys. A Wordstar® mode. True accounting-style keypad. Buffered printer port. And, of course, TeleVideo's full one-year warranty.

The TeleVideo 905. It's the very affordable terminal that'll work wonders with the economy.

Call us toll-free or write, today, for more information.
TeleVideo Systems, Inc.,
1170 Morse Avenue, Sunnyvale,
CA 94088-3568.

TeleVideo®
THE VISION YOU NEED TO SUCCEED

Call 1-800-835-3228

Why We Don't Have The Time Or Money For A Quality Control Department.

How can a software company without a "quality control department" achieve an unsurpassed record of user satisfaction?

How can it possibly gain a reputation for supplying the finest financial application software packages available?

Simple.

We make quality control every employee's responsibility. Not just that of a single department.

The result? Our mainframe applications are so well designed, so thoroughly developed, and so painstakingly tested every step of the way that quality is guaranteed.

Before it leaves the company.

No beta test sites.

No hasty withdrawals from the market.

No disillusioned customers.

Our research and development team is committed to developing and refining the mainframe financial software that is the standard by which other systems are judged.

They make sure our systems are easy to install and easy to use. And, when a customer does need help, our support staff is on call 24 hours a day.

Another reason we are so successful is that, unlike other companies, we don't balk at giving prospective customers a *complete* customer list. We invite them to ask anyone on it how happy they are with our systems. And our people.

Hundreds of FORTUNE 1000 customers already rely on Data Design for quality software. Companies like Alcoa, Burger King, Greyhound, Pillsbury, Bankers Trust, CONTEL, General Electric, Chicago Tribune Company, and Security Pacific Bank.

In fact, 68 percent of our customers previously purchased systems from other, larger vendors—ones with the time and money to invest in a quality control department.

If you are evaluating software for your company, send for a free comprehensive guide designed to make your software selection process easier.

To find out how our systems work for a broad range of medium to large companies on most major computer systems, call Betty Fulton toll-free at 800-556-5511, or mail in this coupon. We'll help you redefine quality.

Please send me information on the following:

- ☐ GENERAL LEDGER & FINANCIAL CONTROL
☐ ACCOUNTS PAYABLE & PURCHASE ORDER CONTROL
☐ FIXED ASSET ACCOUNTING
☐ PROJECT ACCOUNTING
☐ FREE SOFTWARE SOLUTIONS KIT

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY, STATE, ZIP _____

TELEPHONE: _____

COMPUTER BRAND _____

MODEL _____

DATE _____

DA DATA DESIGN ASSOCIATES

Excellence in financial software.

1279 Outwood Parkway, Sunnyvale, CA 94086